United States Department of the Interior
Bureau of Land Management

Environmental Assessment
for
Natural Soda Lease Modification to Federal Sodium Lease COC119986-01

White River Field Office
220 E Market St
Meeker, CO 81641

DOI-BLM-CO-110-2013-0108-EA

June 2014

BLM

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ENVIRONMENTAL ASSESSMENT

Identifying Information

NUMBER: DOI-BLM-CO-110-2013-0108-EA

CASEFILE/PROJECT NUMBER: COC119986-01

PROJECT NAME: Natural Soda Lease Modification to Federal Sodium Lease COC119986-01

LEGAL DESCRIPTION: Township 1 South, Range 98 West, Sixth Principal Meridian
Section 35: Lots 1-4
(approximately 156.37 acres)

APPLICANT: Natural Soda Inc.

BACKGROUND/INTRODUCTION:

Background/Introduction: Natural Soda Inc. (NSI) operates an existing in-situ nahcolite (naturally occurring sodium bicarbonate, $NaHCO_3$) solution mine with an annual production of greater than 130,000 tons of sodium bicarbonate. The mine has been in continuous operations since initiation of solution mining operations in 1991. Natural Soda Inc. currently holds four federal sodium leases that are formed into Wolf Ridge Mining Unit (8,222.6 acres). Natural Soda Holdings Inc. (NSHI) is the holder of one sodium lease, COC01199985-01 (1,319.59 acres) and Oil Shale Research, Development, and Demonstration (RD&D) lease COC74299 (156.37acres).

The processing facility and mining operation are located in the Piceance Creek Basin approximately 37 miles west and south of Meeker, Colorado (Figures 1 and 2). Solution mining is currently occurring at a depth of over 1,900 feet in a bedded 35 to 40 foot thick nahcolite, oil shale and nahcolitic-halite zone in the upper portion of the saline interval of the Parachute Creek Member of the Green River Formation called the Boies Bed. Average nahcolite content of the Boies Bed in NSI's current mining area is between 80 percent to 85 percent nahcolite. A pair of horizontal production wells (an injection well and a recovery well) are drilled along the Boies Bed. These well pairs are typically drilled from the same well pad. Mineability of the Boies Bed is limited to north of the current mining field due to a depositional facies transition from nahcolite to a halite (sodium chloride) within the deposit. To the south of the proposed

modification the Boies Bed is truncated. More than 900 feet of the saline interval exists below the Boies Bed and contains significant bedded and disseminated nahcolite resources.

Advancement of technologies and the increase of onsite knowledge led to several modifications to the mine plan. In 2010 NSI submitted and BLM approved an updated/revised mine and monitoring plan that reflects the current and future mining processes including an expansion of the facilities and the potential to use vertical wells to recover nahcolite resources in lower horizons than the Boies Bed. Plant expansion was completed in early 2013 and increased the original design production of 125,000 tons per year (TPY) to 250,000 TPY of sodium bicarbonate. Annual production will increase up to the new design production of 250,000 TPY by 2016.

The proposed modification is congruent with the area that is encumbered by NSHI's oil shale RD&D lease COC74299 that was analyzed in DOI-BLM-CO-110-2011-0177-EA.

PURPOSE & NEED FOR THE ACTION

Purpose: The purpose of the action is to manage the exploration and development of sodium resources on Public Lands in a manner that avoids, minimizes, reduces, or mitigates potential impacts to other resource values. The Federal Land Policy and Management Act of 1976 (FLPMA) (Public Law 94-579, 43 United States Code [USC] 1701 et seq.) recognizes minerals development as one of the "principal" uses of public lands. Federal mineral leasing policies (Mineral Leasing Act (MLA) of 1920, 30 USC 181-287) and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation is not incurred.

Need: The BLM need is to respond to an application to modify a sodium lease in accordance with the National Environmental Policy Act (NEPA), the MLA of 1920, as amended by FLPMA (1976).

Decision to be Made: The BLM will decide whether to recommend the authorized modification Sodium Lease COC119986-01 by an additional 156.37 contiguous acres and if so, under what terms and conditions.

SCOPING, PUBLIC INVOLVEMENT, AND ISSUES

Scoping: Scoping was the primary mechanism used by the BLM to initially identify issues. Internal scoping was initiated when the project was presented to the White River Field Office (WRFO) interdisciplinary team on 8/6/2013. External scoping was conducted by posting information about this project on the WRFO's on-line NEPA register web site (http://www.blm.gov/co/st/en/fo/wrfo/index.html) on 8/16/2013. On 1/9/14 and 1/13/2014 the WRFO received a request from Information Network for Responsible Mining (INFORM) for additional information. Additional information was submitted by the WRFO to INFORM on 1/10/2014 and 1/13/2014. As of 5/21/2014 no issues or comments have been received.

Issues: No issues were identified during public scoping.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action:
NSI has submitted a lease modification of 156.37 acres to the south of existing operations (see Figures 1 and 2). The modification would allow for logical extension of the current solution mining field. Solution mining would likely occur in the same manner as the current operation. Each mining zone would consist of a horizontal well pair (an injection well and a recovery well) located on a single pad. The depth below surface of each well is approximately 1,900 feet. The horizontal section along the Boies Bed ranges from 300 feet for the recovery well to over 2,000 feet for the injection well. Spacing between well pair mining zones could range from 200 to 250 feet.

Drilling of a well pairs typically would require a month. Additional time could be necessary if difficulties are encountered during drilling and cementing operations. Two well pairs would be drilled during a three year period. The drilling frequency could increase if there is an increase in annual production. It is unlikely more than five well pairs would be drilled within a three year period. Mining life of the well pair would vary depending on the overall length of the horizontal zones and could range from two to five years or more. Single vertical wells could also be utilized to recover lower nahcolite horizons or to help recover sodium resources from horizontal well pairs. The wells are plugged and the associated pad is reclaimed upon exhaustion or effective mining limit of the production well pair. In some cases the wells could be recompleted and converted into monitoring wells.

Development within the modification area could involve the surface disturbance of approximately 35 to 45 acres if geologic conditions remain constant and current solution mining technologies are utilized for development.

Surface disturbance would include; mining well pairs, exploration/monitoring wells, access roads, and associated well field pipelines. It is unlikely additional processing facilities would be constructed in the modification area. Pipelines would be on the surface supported on stanchions or blocks, insulated, and typically adjacent to access roads. Access roads are built with consideration to the duration of use. For example, access for exploration holes would be on native surface.

The number of well pairs for full development of the area could vary depending on future technologies and targeted mining horizons. Utilization of current mining methods could require 18 well pairs and over 25 years of mining for development of the modification area.

Development of the area could begin within two years of lease issuance. NSHI's oil shale RD&D would also involve the recovery of sodium resources.

Design Features: All operations would conform to Natural Soda's approved Mine and Reclamation Plans.

No Action Alternative
There would be no lease modification to add 156.37 contiguous acres to Federal Sodium Lease COC0119986-01.

ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

None.

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: White River Record of Decision and Approved Resource Management Plan (White River ROD/RMP).

Date Approved: July 1, 1997

Decision Number/Page Pages 2-6 and 2-7

Decision Language: "Facilitate the orderly and environmentally sound development of sodium resources occurring on public lands."

AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

Standards for Public Land Health: In January 1997, the Colorado BLM approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, special status species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an EA. These findings are located in specific elements listed below.

Cumulative Effects Analysis Assumptions: Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations (40 CFR 1508.7) as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Table 1 lists the past, present, and reasonably foreseeable future actions within the area that might be affected by the Proposed Action; for this project the area considered was the Natural Resources Conservation Service (NRCS) 5th Level Watershed. However, the geographic scope used for analysis may vary for each cumulative effects issue and is described in the Affected Environment section for each resource.

Table 1. Past, Present, and Reasonably Foreseeable Actions

Action Description	STATUS		
	Past	Present	Future
Livestock Grazing	X	X	X
Wild Horse Gathers	X	X	X
Recreation	X	X	X
Invasive Weed Inventory and Treatments	X	X	X
Range Improvement Projects : Water Developments Fences & Cattleguards	X	X	X
Wildfire and Emergency Stabilization and	X	X	X

Action Description	STATUS		
	Past	Present	Future
Rehabilitation			
Wind Energy Met Towers			X
Oil and Gas Development: Well Pads Access Roads Pipelines Gas Plants Facilities	X	X	X
Power Lines	X	X	X
Oil Shale	X	X	X
Seismic	X	X	X
Vegetation Treatments	X	X	X

Affected Resources:

The CEQ Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an environmental assessment. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts. Table 2 lists the resources considered and the determination as to whether they require additional analysis.

Table 2. Resources and Determination of Need for Further Analysis

Determination[1]	Resource	Rationale for Determination
Physical Resources		
PI	Air Quality	See discussion below.
PI	Geology and Minerals	The Proposed Action would provide the ability to extract sodium resources; see discussion below.
PI	Soil Resources*	See discussion below.
PI	Surface and Ground Water Quality*	See discussion below.
Biological Resources		
NP	Wetlands and Riparian Zones*	See Aquatic Wildlife section below.
PI	Vegetation*	See discussion below
PI	Invasive, Non-native Species	See discussion below
NI	Special Status Animal Species*	The White River and its 100-year floodplain are designated critical habitat for the Colorado pikeminnow from Rio Blanco Lake (upstream of Yellow Creek mouth) downstream to the Green River, though occupied habitat is confined to the river below Taylor Draw dam, about 28 river miles downstream of Yellow Creek. The proposed action would have no reasonable potential to influence the

Determination[1]	Resource	Rationale for Determination
		condition or character of critical habitat (see Aquatic Wildlife section, this table). The lease modification would extend mining operations but would involve no further water use (depletion) from the Upper Colorado River system as habitat for the four endangered Colorado River fishes (including bonytail, humpback chub, razorback sucker) and those BLM-sensitive fish that inhabit the lower White River, including roundtail chub, and bluehead, flannelmouth, and mountain suckers. Water depletions attributable to this mining operation (219 acre-feet average annual) were addressed in earlier section 7 consultation (SE/SLC: 6-5-86-F-019, August 28, 1986); the water use values analyzed in the consultation remain valid. See Migratory Bird section for discussion pertaining to BLM-sensitive Brewer's sparrow and other special status migratory birds. Habitat in the lease tract is not considered appropriate to the support of other BLM-sensitive animals that could occur in the lease tract vicinity (e.g., midget faded rattlesnake, northern goshawk, Great Basin spadefoot).
NI	Special Status Plant Species*	The proposed modification area was surveyed in 2011 by Hayden Wing and no special status plant species (SSPS) were found at the time of the survey. Another portion of the modification area was surveyed in 2012 by WestWater Engineering and no SSPS were found. The closest threatened plant population is 2 miles to the southeast of the modification area. There is little threat to SSPS themselves because none were found during surveys, but pollinator habitat could be removed as a result of the Proposed Action.
PI	Migratory Birds	See discussion below.
NP	Aquatic Wildlife*	The nearest downstream riparian/wetland vegetation (i.e., CPW's 85-acre Violet Springs wetland) is separated from the nearest point of the lease tract by 4.2 channel miles of ephemeral tributary drainages and an additional 3.1 mile ephemeral reach of Yellow Creek. Below this wetland, Yellow Creek becomes ephemeral, but develops more persistent surface water expression about 6.7 channel miles downstream. From this point, Yellow Creek is intermittent with perennial reaches for about 4.4 channel miles before reaching the falls near the mouth of Barcus Creek (a fish barrier). Yellow Creek remains perennial for another 7.1 channel miles to its mouth with the White River. This lower reach supports a predominately native aquatic community composed of native speckled dace and BLM-sensitive mountain and flannelmouth suckers and northern leopard frog. The ephemeral reaches support upland or facultative vegetation with no riparian affinity and are undifferentiated from adjacent valley terraces, whereas vegetation associated with intermittent and perennial reaches is composed primarily of facultative grasses and obligate sedges and rushes.
PI	Terrestrial Wildlife*	See discussion below.
NI	Wild Horses	The Proposed Action is not located within a designated wild horse management area. A designated Herd Management Area (HMA) is located approximately 1.5 miles west of the Proposed Action.

Determination[1]	Resource	Rationale for Determination
		However, wild horses are known to exist outside of the HMA in this general area, with previous attempts to gather all of these wild horses in this area unsuccessful.
Heritage Resources and the Human Environment		
PI	Cultural Resources	See discussion below.
PI	Paleontological Resources	See discussion below.
NP	Native American Religious Concerns	No Native American Religious Concerns are known in the area. Requests for tribal consultation for the overlapping oil shale lease tract were mailed to tribes with a prior noted interest in this area on October 14, 2011. The Ute Mountain Ute, the Southern Ute Indian Tribe, the Ute Indian Tribe of the Uintah and Ouray Reservation, and the Eastern Shoshone Tribe were mailed letters on October 14, 2011. After the 30 days follow up phone calls and emails were conducted. The Eastern Shoshone Tribe was consulted with and they had no concerns. No other replies were received.
PI	Visual Resources	See discussion below.
PI	Hazardous or Solid Wastes	See discussion below.
NI	Fire Management	The Proposed Action is within the B6 Yellow Creek fire management polygon. The Proposed Action would have no effect on fire management within the polygon.
NI	Social and Economic Conditions	The Proposed Action would not affect NSI's current foreseeable employment and there would not be any substantial changes to local social or economic conditions. A future loss of royalty paid to the federal government could occur due to potential bypass of recoverable sodium resources if the Proposed Action is not authorized. (see Geology and Minerals *Environmental Consequences of the Proposed Action*)
NP	Environmental Justice	According to recent Census Bureau statistics (2010), there are no minority or low income populations within the WRFO.
Resource Uses		
PI	Forest Management	See discussion below.
PI	Rangeland Management	See discussion below
NI	Floodplains, Hydrology, and Water Rights	The modified lease area is not in a floodplain and is unlikely to impact surface hydrology. The project will use freshwater for operations from groundwater wells with valid permits with the Colorado Division of Water Resources that approve this use.
PI	Realty Authorizations	See discussion below.
PI	Recreation	See discussion below.
PI	Access and Transportation	See discussion below.
NP	Prime and Unique Farmlands	There are no Prime and Unique Farmlands within the project area..
Special Designations		

Determination[1]	Resource	Rationale for Determination
NP	Areas of Critical Environmental Concern	The nearest ACEC is Ryan Gulch which is 1.9 miles to the east of the Proposed Action. There will be no known impacts from the Proposed Action.
NP	Wilderness	The Proposed Action is located several miles from any Wilderness Study Area, identified lands with wilderness characteristic unit, or designated Wilderness.
NP	Wild and Scenic Rivers	There are no designated Wild and Scenic Rivers in the WRFO.
NP	Scenic Byways	The Proposed Action is located several miles from any Scenic Byway.

[1] NP = Not present in the area impacted by the Proposed Action or Alternatives. NI = Present, but not affected to a degree that detailed analysis is required. PI = Present with potential for impact analyzed in detail in the EA.
* Public Land Health Standard

AIR QUALITY

Affected Environment:

The Natural Soda mining operation is located within Piceance Creek Basin which is an attainment area for national and state air quality standards. The attainment designation means that no violations of ambient air quality standards have been documented in the area (EPA 2013). The Proposed Action is located more than 10-miles from any non-attainment or special designation airsheds. Non-attainment areas are designated by U.S. Environmental Protection Agency (EPA) as having air pollution levels that persistently exceed the national ambient air quality standards (NAAQS). The closest non-attainment areas are along the Front Range corridor in Colorado and are in non-attainment for ozone. The closest special designation areas are Dinosaur National Monument which is located northwest of the project area (designated Class II airshed with Prevention of Significant Deterioration (PSD) with thresholds for sulfur oxides and visibility), and the Flat Tops Wilderness Area located east of the Proposed Action (designated Class I).

Projects that could impact special designation areas and/or non-attainment areas may require special consideration from the Colorado Department of Public Health and Environment (CDPHE) and the EPA. General conformity regulations require that federal activities do not cause or contribute to a new violation of NAAQ standards; that actions do not cause additional or worsen existing violations of the NAAQ standards; and that attainment of these standards is not delayed by federal actions in non-attainment areas.

The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set NAAQS (40 CFR part 50) for criteria pollutants. Criteria pollutants are air contaminants that are commonly emitted from a majority of emissions sources and include carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2), particulate matter smaller than 10 and 2.5 microns (PM_{10} & $PM_{2.5}$), ozone (O_3), and nitrogen dioxide (NO_2). The CAA established 2 types of NAAQS:

- Primary standards: – set limits in order to protect public health, including the health of "sensitive" populations (such as asthmatics, children, and the elderly).
- Secondary standards: – set limits in order to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

The EPA regularly reviews the NAAQS (every five years) to ensure that the latest science on health effects, risk assessment, and observable data such as incidence rates are evaluated. The Colorado Air Pollution Control Commission (CAPCC), by means of an approved State Implementation Plan (SIP) and/or delegation by EPA, can established state ambient air quality standards for any criteria pollutant that are at least as stringent as, or more so, than the federal standards. Ambient air quality standards must not be exceeded in areas where the general public has access for Colorado Ambient Air Quality Standards (CAAQS) or NAAQS.

Stationary air emission sources are fixed-site producers of pollution such as power plants, natural gas processing plants, oil refineries, manufacturing facilities, and other industrial facilities. The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division (APCD) has authority to regulate and issue Air Permits for stationary sources of pollution in Colorado. Colorado's SIP provides for a procedural permitting program and requires air pollution sources to file Air Pollution Emissions Notices (APENs). The regulation also requires new or modified sources of air pollution obtain preconstruction permits, with certain exemptions. If the Natural Soda processing plant is considered a stationary emission source, it is incumbent upon the applicant to apply and obtain a permit for this facility. Based on a review of the State air quality permits, as of January 2014, Natural Soda has a permit for its dryer facility (10RB1573) which is in process, but has not been issued.

The Proposed Action is in Rio Blanco County within the Western Counties Monitoring Region of Colorado (APCD 2010). Local air quality parameters including particulates and ozone are measured at monitoring sites located at Meeker, Rangely, Dinosaur, and near the Flat Tops Wilderness Area. Ozone data have been collected at Federal reference air quality sites supported by the BLM since 2010 and located outside Meeker and Rangely. The closest location for an Interagency Monitoring of Protected Visual Environments (IMPROVE) site is near the Flat Tops Wilderness, northeast of the Project Area. IMPROVE sites measure visibility impairment from air borne particles.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The Proposed Action would result in low and short-term impacts on air quality. Implementation of the Proposed Action would result in emissions of criteria pollutants, hazardous air pollutants (HAPs), and greenhouse gases (GHGs). Fugitive particulate matter would be emitted when vehicles travel on existing dirt and paved roads. Emissions of particulate matter would be generated from processing equipment, material handling transfer points, and storage piles. Air quality would also be impacted by fuel combustion sources, such as the engine exhaust and any stationary fuel combustion sources. Additionally, emissions would be generated from surface facilities construction and drilling activities for injection and production wells.

Increases in the following criteria pollutants would occur due to combustion of fossil fuels: carbon monoxide, nitrogen dioxide, sulfur dioxide, and ozone (a secondary pollutant formed photochemically from volatile organic compounds (VOCs) and nitrogen oxides (NOx)). Ozone advisories and alerts were issued in the winter of 2011 and 2013 for Rio Blanco County based on data collected from the Rangely monitoring site.

Ozone can cause breathing difficulties and worsen respiratory infections especially in the elderly, the young and those with pre-existing ailments such as asthma. Ozone also affects vegetation and ecosystems, leading to reductions in agricultural crop and commercial forest yields, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests, and other environmental stresses (e.g., harsh weather). Generation of ozone under stagnate air masses, with continuous snow cover or in regions with soils with a low albedo can increase dramatically. Ozone produced under stagnant air masses can be transported many miles from its point of origin. The best way to reduce ozone in the atmosphere is to reduce the compounds that react to form it at its point of origin at times when conditions favor the production of ozone.

It is unlikely that the headwaters of Piceance Creek Basin, where the Proposed Action is located would be in a future non-attainment area for ozone. This is due to the distance from the Uinta and Yampa River Basins; and local climate conditions favor dispersion of pollutants that form ozone.

Soil disturbance resulting from construction, heavy equipment, travel on existing roads, and drill rigs is expected to cause increases in fugitive dust, specifically particulate matter (PM) 10 microns (μm) or less (PM_{10}) and particles 2.5 μm or less ($PM_{2.5}$). Fugitive dust production emissions would cause impacts to local and regional air quality. Dust production is most likely during construction, material handling and drilling activities, especially when conditions are dry and/or windy.

PM_{10} and $PM_{2.5}$ are created from windblown dust and soil from fields, agricultural crops, agricultural livestock, paved road re-entrained dust, unpaved roads, construction activities, and mining and quarrying, construction sites, automobile and diesel engine exhaust, waste burning, soot from wood fires, and sulfates and nitrates from combustion sources such as industrial boilers (CAPCD 2013). Particulate matter in the air is made up of a number of components from these sources, including acidic aerosols (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). The chemical composition of $PM_{2.5}$ consists of five major components sulfate, nitrate, organic carbon (OC), elemental carbon (also called black carbon, BC), and crustal material. More so than other pollutants, PM_{10} is a localized pollutant where concentrations vary considerably due to rapid rates of deposition and dispersion.

Fine particles are efficient in scattering and absorbing light and are the major contributor to visibility problems. The effects of particulates include visibility degradation, climate change, vegetation damage and human health impacts. Once the injection and production wells go into interim reclamation topsoil removed during road and pad construction would be redistributed and stabilized and seeded for reclamation. As vegetation establishes in the reclaimed areas, dust production will occur only when vehicles travel on the access roads to service the wells. Based on data from Air Quality monitoring stations in the area, the increase in airborne particulate matter from this project is not expected to exceed CAAQ or NAAQ standards on an hourly, 8-hour average or daily basis.

In summary, soil disturbance resulting from construction of pads and roads and drilling and emissions from material handling and process are expected to cause increase airborne fine particulate matter in the project area and may contribute to reductions in regional visibility. In addition, increases in the following criteria pollutants: carbon monoxide, VOCs, ozone, nitrogen dioxide, and sulfur dioxide would also occur due to combustion of fossil fuels during drilling and production activities. Non-criteria pollutants such as carbon dioxide, methane and nitrous oxides, air toxics (e.g., benzene), total suspended particulates (TSP), and increased impacts to visibility and atmospheric deposition may also increase as a result of the Proposed Action.

Even with these increased pollutants the Proposed Action is unlikely to result in an exceedance of NAAQ or CAAQ standards, is not likely to be located in a future non-attainment area, and is likely to comply with applicable PSD increments and other significant impact thresholds.

Cumulative Effects: Air quality in Region 11 (Western slope of Colorado) is affected by both mobile and stationary emitters of air pollutant (CAPCD 2013). Fugitive dust can come from natural sources that are not preventable, such as volcanic eruptions, large regional dust storms, and wildfires. Downward trends in annual NO_2, CO, and SO_2 have been measured at air quality monitoring sites in the region and are likely the result of national emissions control programs. For example, between 1990 and 2012, national emissions of NOx and VOC emissions have declined 56 percent and 35 percent, respectively (CAPCD 2013). Decreases in SOx emissions from diesel fuel and power plants coincides with in a decrease in SO_2 measured at IMPROVE and other air quality monitoring programs. Even though concentrations of these pollutants are low and decreasing, EPA continues to track these pollutants because of their contribution to secondary air pollutants and issues (e.g., ozone, $PM_{2.5}$, and visibility).

Nationally, about 55 percent of the oxides of nitrogen emissions come from on and off-road vehicles and about 28 percent come from industrial sources (CAPCD 2013). Industrial sources of NO_2, CO, and SO_2 that affect air quality in this region include stationary source facilities such as gas compressor plants, sand and gravel pit operations. Portable industrial sources of these pollutants include facilities such as drill rigs, well completion activities, gravel crushers, and asphalt plants. Mobile (or non-point) sources of emissions within the region would include highway or on-road vehicles, off-road vehicles such as construction related equipment (track dozers, loaders, backhoes, etc.), and recreational vehicles (snowmobiles, ATVs, and dirt bikes). Smoke from grass and forest fires and natural dust events represent non-point source emissions that can also impact air quality.

In general air quality within the region is good due to few emission sources, good dispersion characteristics and national trends showing a decrease in some air pollutants. However, some emissions have caused localized or regional level increases in pollution monitoring values such as ozone and $PM_{2.5}$ within the past ten years. This has led to an increase in air quality monitoring in the region including the BLM supported Federal Reference sites in Rangely and Meeker.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No increase in impacts to air quality would occur from the No Action Alternative.

Cumulative Effects: Impacts for the Western Slope of Colorado would be similar to those described for the action alternative.

Mitigation:

1. Natural Soda will limit unnecessary emissions from point or nonpoint pollution sources and prevent air quality deterioration from necessary pollution sources in accordance with all applicable state, federal and local air quality law and regulation.
2. If the Natural Soda processing plant requires a stationary emission source permit, it is incumbent upon the applicant to apply and obtain a permit for the facility and provide BLM with a copy of this permit for its project files.
3. Natural Soda will treat all access roads with water and/or a chemical dust suppressant during construction and drilling activities so that there is not a visible dust trail behind vehicles. Any technique other than the use of freshwater as a dust suppressant on BLM lands will require prior written approval from BLM.

GEOLOGY AND MINERALS

Affected Environment:

The lease modification is located in the Piceance Basin which is bounded on the north and east by the Axial Basin Uplift and Grand Hogback respectively, by the Gunnison and Uncompahgre uplifts on the south, and by the Douglas Creek Arch on the west. The basin is asymmetrical, roughly 90 by 135 miles in extent, with an area of approximately 12,500 sq. mi. In the deepest portion the sedimentary section exceeds 20,000 feet in thickness. The modification is near the depositional center in the northern portion of the Piceance Basin.

The modification is situated on a northeast trending ridge between the Yellow Creek and Piceance Creek drainages and elevations within the modification range from about 6,650 to 6,770 feet. Surficial geology of the area is the upper portion of the Uinta Formation (Duncan).

Rock units which would be affected by the project consist of the Uinta and Green River formations. The Uinta Formation is mainly composed of brownish sandstones with some subsidiary siltstones and marlstones deposited in fluvial environments, which gradually in-filled the older Green River lacustrine environment. The Green River Formation is principally composed of light gray marlstones with subsidiary sandstones and oil shale, a heavily organic marlstone. These geologic zones are identified as alternately rich (R-zones) and lean (L-zones) with respect to oil shale content, and the USGS has estimated the total yield of eight rich layers in the vicinity of the modification to be approximately 3,200,000 barrels/acre (Johnson *et al* 2010). A stratigraphic chart denoting rock units in the vicinity of the proposed modification is included as Figure 3.

Mineral resources within foreseeable development located in the vicinity of the proposed modification include oil and gas, sodium minerals, and oil shale. Both the sodium minerals and oil shale are contained within the Green River Formation.

The modification is located in the areas identified as available for oil and gas, oil shale; and multi-mineral leasing and development in the White River ROD/RMP and is congruent with NSHI's oil shale RD&D Lease COC74299 (Figures 1 and 2). ExxonMobil's oil shale RD&D lease COC74300 borders the western boundary of the proposed modification. The next nearest oil shale RD&D lease to the Proposed Action and is approximately 1.8 miles southwest of the southwestern corner of the modification and the remaining RD&D leases are located four to seven miles from the modification. The modification shares its northern boundary with NSI's federal sodium lease COC118327-01.

Bedded and disseminated nodular deposits of sodium minerals, principally nahcolite, with subsidiary amounts of dawsonite ($NaAl(OH)_2CO_3$), and halite (NaCl) are present in the central portion of the Piceance Basin Green River Formation depocenter. These minerals are associated with oil shale layers in the lower and middle portion of the Parachute Creek Member. Nahcolite is the only sodium mineral in the basin which is currently commercially exploitable. The nahcolite-bearing interval is mapped as being as much as 1,400 to1,500 feet thick in the depocenter, thinning towards the basin margins, and contains about 43.3 billion short tons of reserves. Thickness of the interval in the modification area averages 960 feet (USGS 2009). While bedded nahcolite occurs, however the majority of the mineral occurs as variable-sized aggregates within the oil shale (USGS 2010). Recoverable sodium bicarbonate resource of the lease modification area is estimated at approximately four million tons. This estimate is based on NSI's current mining process and development.

Vertical solution mining was also attempted by American Soda, LLP, a division of Solvay America, Inc. (AMSO), in 2000 from federal sodium leases at a facility located three miles northeast of the proposed lease modification. The process dissolved nahcolite from bedded nahcolite and nahcolitic oil shale at depths of 1,500 to 2,000 feet. Hot water was injected and recovered from single vertical wells with dual completions casing on 300 foot spacing. AMSO predicted a cavity configuration of 600 feet in height and a final average cavity diameter of 200 feet maintaining a 100 foot-wide barrier pillar between cavities (BLM 1999). AMSO's target zone is in the saline zone of lower portion of the Parachute Creek Member, about 700 feet below the Mahogany zone. Operations at the processing plant were discontinued in April 2004 following a failure to economically produce soda ash from the nahcolite. No subsequent sodium production has occurred from AMSO's federal sodium leases.

Natural gas has been produced in the area since 1940 from the Tertiary Wasatch Formation, from the Douglas Creek Member of the Green River Formation, and from the Cretaceous Mesaverde Formation. The Mesaverde gas is the principal objective of most of the current drilling in the area. Each natural gas well is expected to drain an area of 10 to 20 acres with the production zone ranging from 9,000 feet to over 12,000 feet below ground surface. All federal oil and gas mineral estate in the area is currently leased. The modification is encumbered by federal oil and gas lease COC60735 which is committed to WPX's Ryan Gulch Oil and Gas Exploratory Unit COC68239X. The Colorado Oil and Gas Conservation Commission (COGCC) database identifies 29 bottom hole locations within one half mile of the proposed modification.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Implementation of the Proposed Action could interfere with development of oil and gas resources if additional well pads for oil and gas wells are not allowed within the proposed lease tract. The current oil and gas operator in the area avoids impacts to the existing sodium mining operations and oil shale extraction by cooperatively working with NSI in locating well pads and restricting directional deviation outside of the current horizontal sodium solution mining zone. Oil and gas development in the area occurs in the Mesaverde Formation and is located at depths of greater than 6,000 feet below the sodium. Implementation of directional drilling techniques, already commonly practiced in the area, would permit oil and gas development while avoiding oil shale and sodium development surface facilities. Configuration of the modification could increase the bottom hole directional distance of future gas wells by the width of the modification (more than 1,300 feet) on the southern portion of the sodium mining area.

Drilling operations for sodium development in the modification could be affected by geologic characteristics of portions of the Green River and Wasatch formations. Both units are known to contain zones prone to lost circulation, particularly the Dissolution Surface and A and B Groove zones within the Green River Formation of the Parachute Creek Member. Circulation problems in these zones can also affect the integrity of casing cement jobs. These potential problems are manageable using careful drilling techniques; appropriate mud, cement, and casing design; and performing proper post-cementing integrity evaluations according to BLM requirements. The lease modification would allow for the NSI to recover, process, and sell the sodium bicarbonate recovered during the first stage of NSHI's RD&D two stage process. NSI's recovery of sodium bicarbonate within the proposed lease modification in the current Boies Bed mining horizon should have limited impacts on NSHI's oil shale RD&D. Sodium development of the modification would have little to no effect on ExxonMobil's adjacent oil shale RD&D project (COC74300).

Code of Federal Regulation 43§ 3594.5 (c) limits solution mining to within 500 feet of the lease boundary without written permission from the authorized officer. NSI has been authorized to mine to within 100 feet of the mine plan boundary. Approval of the Proposed Action would eliminate the buffer along the northern lease modification boundary and the adjacent southern boundary of COC0118327-01 (Figure1). This could prevent a potential 22 acre sodium bicarbonate bypass and would allow for the utilization of NSI's current commercial horizon mining technology to effectively recover approximately 670,000 tons of sodium bicarbonate that underlie the 22 acre buffer.

Cumulative Effects: The cumulative impacts analysis area for geology and minerals is the Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. The Proposed Action would increase acres of surface area unavailable for oil and gas development below oil shale leases. This could require additional lengths in horizontal drilling for the recovery of the oil and gas resources underlying NSI's proposed lease modification, RD&D tracts, and sodium mine area. Based on 20 acre spacing an additional 44 oil and gas wells and 3 to 4 well pads would be required for the development of the natural gas resource within a one half mile radius of the lease modification.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Under the No Action Alternative, the lease modification would be denied, and there would be no direct, or cumulative project-related impacts in the lease modification area. Indirect effects would be the potential loss of approximately 670,000 tons of recoverable sodium bicarbonate. The recovery of sodium bicarbonate during NSHI's oil shale RD&D project would occur (maximum of 600 tons) and the remaining underlying sodium bicarbonate would not be recovered. Ongoing impacts to geology and minerals would result from the continuation of existing management actions on the public lands. The logical progression of solution mining the nahcolite resources from current operation to the south allowing for the effective use of existing infra-structure would not occur. This could create additional disturbance that would be associated with the expansion of the mine field to avoid the areas of halite.

Cumulative Effects: Cumulative impacts would be the similar and could be greater as under the Proposed Action with the continuation of sodium operations on NSI's existing sodium leases.

Mitigation: None.

SOIL RESOURCES

Affected Environment:

The classifications of soils within 30 meters of the proposed pads and centerlines of the access roads and pipelines that could be impacted by the Proposed Action are shown in Table 3. There are no fragile soils, soils with landslide potential or saline soils on Federal lands within the lease modification area.

Table 3. Soil Classifications within the Lease Modification Area (NRCS, 2008).

Soil Classification	Parent Material	Erosion Hazard	Rutting Hazard	Potentially Impacted (Acres)
Yamac loam, 2 to 15 percent slopes	alluvium and/or eolian deposits	Severe	Severe	85
Redcreek-Rentsac complex, 5 to 30 percent slopes	eolian deposits and/or residuum weathered from sandstone	Severe	Moderate	29
Piceance fine sandy loam, 5 to 15 percent slopes	colluvium and/or eolian deposits derived from sandstone	Severe	Severe	25
Rentsac channery loam, 5 to 50 percent slopes	residuum weathered from calcareous sandstone	Severe	Slight	17

Of the 156 acres analyzed, all of the soils have a severe erosion hazard and more over 70 percent of the soils (110 acres) have a severe rutting hazard. It is likely that roads built in this area with only native materials will not function as all-weather surfaces. This is due to the parent material for soils which is primarily eolion deposits derived from sandstones. The majority of the soils are loams and therefore decent soils for establishing vegetation and reclamation. There are no slopes greater than 35 percent in the lease modification area.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: With proper Best Management Practices (BMPs0 for stormwater, construction, reclamation and mitigation, direct impacts to soils outside areas disturbed for access roads and pads (35 to 45 acres) are not expected. However, the soil erosion hazard is severe for all soils in the lease modification area. Surfacing access roads that are used often or need to be used in bad weather would improve the wear of the road surfaces and reduce the risk of increased erosion adjacent to roads. Drainage features on un-surfaced roads built with native materials are likely to fail when used more than once a week or on roads that cannot be avoided when soils are saturated.

Direct impacts from the construction of the well pads and access roads would include soil compaction, removal of vegetation, exposure of subsoil, mixing of soil horizons, loss of topsoil productivity, and an increase in the susceptibility of soils to wind and water erosion. Compaction due to construction activities and using roads built will native material would reduce aeration, permeability and water-holding capacities of soils in some locations. Removal of vegetation exposes soils to erosion from rainfall, wind and surface runoff. Exposure of subsoil and mixing of soil horizons can change the physical characteristics of subsoil such as texture structure and rock content and may reduce the productivity of these soils.

Loss of topsoil productivity can occur during soil storage due nutrient loss through percolation of precipitation through the soils, physical loss and mixing of less productive soil layers during moving and a loss of structure. An increase in surface runoff and sedimentation could be expected from impacted soils and these soils are likely to be less resilient to erosion from surface runoff after disturbance.

These direct impacts from the proposed action could result in increased indirect impacts to soils off the construction sites such as increased runoff and erosion. Implementation of BMPs for stormwater and reclamation will reduce impacts from this project and should limit impacts to construction sites. Mitigation provided below should achieve proper BMPs for the project. However, there is the potential for intense storm events or BMP failures resulting in erosion off the site.

Indirect impacts from this project could also result in contamination of surface and subsurface soils due to unintentional leaks or spills from construction equipment, storage tanks production equipment and if these spills occurred they could affect the productivity of soils. Contaminated soils would likely be remediated on site or excavated and removed to a disposal facility if possible. Extensive or long-term impacts would be avoided if possible with remediation efforts.

Cumulative Effects: The cumulative effects area for this analysis, is townships 1S 98W and 1S 97W. The primary and modified lease areas are in township 1S 98W. The primary lease area has disturbance from injection/production wells, access roads, the storage and evaporation pond, material processing facility and material storage. Outside of the primary and modified lease boundary monitoring wells have been established to evaluate mining operations. Natural gas well pads in the Yellow Creek watershed are within the Mesaverde Play oil and gas development area and are likely to have 2-3 multiple well pads per section.

Other soil impacting activities within the cumulative analysis area include gas processing facilities (Enterprise Gas plant) for well pads, pipelines, roads and support facilities. Extensive development of oil and gas is foreseeable in this analysis area. There are also oil shale research and development leases, a major electrical sub-station and a large natural gas-processing facility in the same general area as the lease modification. Livestock grazing and dispersed recreation also occur on public lands in the area and these activities may reduce canopy cover and lead to localized erosion in some reclamation cases. No other impacts other than oil and gas development, the industrial development described, livestock and reclamation are expected in the analysis area. In general, soil disturbance for the Proposed Action and other activities are likely to reduce soil productivity localized within the modified lease area.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No impacts to soils would occur.

Cumulative Effects: Impacts would be similar to those described for the action alternative.

Mitigation:

1. All construction activity and use of unsurfaced roads shall cease when soils or road surfaces become saturated to a depth of three inches unless there are safety concerns or activities are otherwise approved by the Authorized Officer.
2. All maintenance and construction of access roads should comply with the most recent version of the BLM's "The Gold Book".

Finding on the Public Land Health Standard #1 for Upland Soils:

With mitigation, this action is unlikely to reduce the productivity of soils on public lands.

SURFACE & GROUNDWATER QUALITY

Affected Environment:

Surface Water: The modified lease boundary is on a ridge between watersheds in the headwaters of ephemeral tributaries to Yellow Creek and Piceance Creek, which both drain into the White River. Table 4 describes water segments that may be impacted by this project.

Table 4. Water Quality Classification Table (CWQCC 2013)

White River Segment	Segment Name	Use Protected	Protected Beneficial Uses			
			Aquatic Life	Recreation	Agriculture	Water Supply
13b	Mainstem and tributaries to Yellow Creek above Barcus Creek	No	Warm 2	Not Primary Contact Recreation	Yes	No

16	Tributaries to Piceance Creek from the source to the White River	No	Warm 2	Primary Contact Recreation	Yes	No

Both Segment 13b which includes Yellow Creek and its tributaries and segment 16 that describes tributaries to Piceance Creek from its source to the White River are protected for warm water aquatic life (Warm 2). The warm designation means the classification standards would be protective of aquatic life normally found in waters where the summer weekly average temperatures frequently exceed 20 °C. The Warm 2 designation means that it has been determined that these waters are not capable of sustaining a wide variety of warm water biota.

Groundwater: Precipitation in this area generally moves from areas of recharge to surface waters via alluvial aquifers, bedrock aquifers and on the surface during spring melt and rain storms. A portion of annual precipitation infiltrates to deeper bedrock aquifers that contribute to contact springs and the baseflow of Yellow Creek and Piceance Creek. Springs and ground water inputs generally occur in both bedrock and alluvial aquifers along valley bottoms.

Contact springs are common in the area and are often the result of upper bedrock aquifers consisting of fractured, lean oil shale zones and siltstones of the Green River Formation above and below the Mahogany Zone. Perched groundwater zones occur locally when saturated zones contact differences in permeability and solubility of individual formations. These contact zones can occur in the ridges between surface water drainages and may be manifested as springs and seeps above the valley floor in outcrop areas.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Surface Water: Clearing, grading, and soil stockpiling activities associated with the Proposed Action would alter overland flow and natural infiltration patterns. Potential direct impacts include surface soil compaction caused by construction equipment and vehicles, removal of vegetation and disturbance of surface soils, which would increase rain-splash erosion and reduce the soil's ability to absorb water and increase the volume and rate of surface runoff, which in turn would increase surface erosion.

The soil analysis indicated the potential for severe rutting on access roads. To reduce erosion adjacent to roads and potential impacts to the water quality of downstream public lands access roads some roads will require an all-weather surface. Road maintenance will include restoring the travel surface shape, road surfacing to maintaining effective drainage features during drilling and production of the wells and should reduce the risk of increased sedimentation to surface waters.

Surface runoff associated with storm events may increase sediment loads in surface waters down gradient of disturbed areas. Sediment can be deposited and stored in minor drainages where it would be moved into Piceance and Yellow Creek and eventually the White River during heavy convective storms. Surface erosion for this project is most likely during the construction and early production phases of the project and would be mitigated using BMPs for stormwater.

Groundwater: As described in the Affected Environment, aquifers in the Project Area include the Tertiary Uinta-Animas aquifer and the Cretaceous Mesaverde aquifer. The Uinta-Animas aquifer consists of portions of the Green River and Uinta formations and is generally divided into upper and lower units by the Mahogany zone of the Parachute Creek Member of the Green River Formation, which retards water movement vertically.

According to the mine plan Natural Soda is expanding the production of the plant to 250,000 tons per year of sodium bicarbonate. Completion of plant expansion is anticipated in 2012, with stepped production increases approaching plant capacity around 2016. The Proposed Action would include injection of hot unsaturated (barren) brine into the production zone under the modified lease and the pumping of the saturated or impregnated solution out of the production well. This solution is then routed to the process plant via a surface pipeline. Production well bores will be horizontal completions within the Boies Bed, which is a nacholite deposit near the top of the dissolution surface.

The production process requires freshwater inputs that are supplied by groundwater wells with water rights allowing this use. The groundwater wells are completed in the A and B Groove and may result in local drawdowns of these aquifers. After this water has be used for production and reused to the point it can't be used any longer it is disposed of in an injection well.

The proposed casing and cementing program for each of the wells has been designed to protect and/or isolate all usable water zones. Surface casing will be set and cemented to the surface, before drilling and setting the production casing. There are three zones of freshwater the surface casing will be designed to protect. These three zones are the Uinta formation that makes up the surface geology and the A-groove and the upper portion of the B-groove in the Parachute Member of the Green River formation. Loss of drilling fluids may occur at any time in the drilling process including when drilling the surface casing due to changes in porosity or other properties of the rock being drilled. When this occurs, drilling fluids may be introduced into the surrounding formations which could include freshwater aquifers. If drilling fluids are lost groundwater aquifers may be contaminated by drilling additives.

Impacts to groundwater resources could occur due to failure of well integrity, surface spills, and/or the loss of drilling, completion and production of the sodium bicarbonate. Types of chemical additives used in drilling activities may include acids, hydrocarbons, thickening agents, lubricants, and other additives that are operator and location specific. Groundwater resources (including the contact springs, perched aquifers, and groundwater zones described in the Affected Environment) are all in elevations above the surface casing. With proper drilling, completion and production practices contamination of groundwater resources is unlikely.

Cumulative Effects: The cumulative effects area for this analysis is the Yellow Creek and Piceance Creek watersheds. The majorities of these watersheds are within the Mesaverde Play oil and gas development area and are likely to have 2-3 multiple well pads per section when the development is completed. Extensive development of oil and gas is foreseeable in this analysis area. Other water impacting activities within the cumulative analysis area include gas processing facilities (Enterprise Gas plant) for well pads, pipelines, roads and support facilities. There also are oil shale research and development leases, a major electrical sub-station and a large natural

gas-processing facility in the same general area as the lease modification. Livestock grazing and dispersed recreation also occur on public lands in the area and these activities may reduce canopy cover and lead to localized erosion in some reclamation cases. No other impacts other than oil and gas development, the industrial development described, livestock and reclamation are expected in the analysis area.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Neither ground nor surface water quality would be impacted by the no action alternative.

Cumulative Effects: Impacts would be similar to those described for the action alternative, but would not include the impacts from the Proposed Action.

Mitigation:

1. To protect surface waters below the project area, keep road inlet and outlet ditches, sediment retention basins, and culverts free of obstructions, particularly before and during spring run-off and summer convective storms. Provide adequate drainage spacing to avoid accumulation of water in ditches or on road surfaces.
2. Install culverts and low-water crossings with adequate armoring of inlet and outlet. Patrol areas susceptible to road or watershed damage during periods of high runoff.
3. Locate drainage dips and drainage ditches in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or dips.
4. To reduce erosion adjacent to roads and protect water quality in downstream public lands by maintaining the drainage features of the access roads, access roads will be surfaced with six inches of road base and/or gravel. Maintenance will include restoring the travel surface shape, road surfacing to maintaining an effective all-weather surface when required.
5. When drilling to set the conductor and surface casing, drilling fluid will be composed only of fresh water, bentonite, and/or a benign lost circulation material that does not pose a risk of harm to human health or the environment (e.g., cedar bark, shredded cane stalks, mineral fiber and hair, mica flakes, ground and sized limestone or marble, wood, nut hulls, corncobs, or cotton hulls).

Finding on the Public Land Health Standard #5 for Water Quality:

It is unlikely that construction of these well pads, access roads, installation of pipelines or drilling would result in an exceedence of state water quality standards.

VEGETATION

Affected Environment:

The proposed lease modification/expansion area is located on predominantly a Rolling Loam ecological site with a moderate level of pinyon/juniper encroachment into the Wyoming sagebrush (*Artemesia tridentata* spp. *wyomingensis*) community and to a lesser extent on a mid-seral Pinyon/Juniper ecological site characterized by young and mid age Utah juniper (*Juniperus osteosperma*) and a sparse herbaceous understory. A small percentage of the modification/expansion area includes previously disturbed areas such as existing pads, infrastructure, and roads. Primarily in the areas associated with earthen disturbances, there is a component of cheatgrass (*Bromus tectorum*) that would readily spread into newly disturbed areas. A summary of observed vegetation classes is indicated in Table 5 below.

Table 5. Vegetation Classes Present on Proposed Lease Expansion Area

Ecological Site	Vegetation Classification	Plant Species
Rolling Loam	Sagebrush / Grass Shrubland	Wyoming big sagebrush, winterfat, low rabbitbrush, horsebrush, bitterbrush, western wheat grass, Indian rice grass, squirreltail, June grass, Nevada and Sandberg bluegrass
Pinyon/Juniper	Pinyon/Juniper Woodland	Pinyon pine, Utah juniper, mountain mahogany, bitterbrush, serviceberry, Wyoming big sagebrush, beardless bluebunch wheatgrass, western wheatgrass, June grass, Indian rice grass, mutton grass

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Vegetation resources would be directly affected by the construction actions on an estimated total of 35 to 40 acres. Direct effects would involve removal of native vegetation potentially including mature trees and would result in a loss of habitat for wildlife. Soil could be lost and/or damaged during the life of the project due to erosion, mixing of soil horizons, compaction, degradation during storage and or contamination. Limiting factors affecting revegetation success for affected soils could be exacerbated by operational activities and inadvertently by livestock grazing on reclaimed areas.

Noxious/invasive plant species could become an increased component of plant communities due to ground disturbance and seed dispersing activity in the area. Cheatgrass may be particularly problematic, as this species is capable of invading a variety of habitats, often becoming a dominant species. Cheatgrass is only palatable as a forage source for wildlife and livestock for a short portion of the growing season and its annual production is variable and unreliable.

Implementation of NSI's approved Reclamation Plan for construction, reclamation, and reclamation monitoring would limit the above impacts.

Cumulative Effects: The proposed disturbance that could be associated with the lease modification, when added to other projects and developments, in and near the project area, as well as within the Yellow Creek and Piceance Creek watershed as a whole, would result in an increase in short-term removal of existing vegetation on public land. Long-term changes in plant

community composition and structure would also occur in the project sites and on a broader scale from activities such as livestock grazing. Of the total potential vegetation removal near the project area and the Piceance Basin, the proposed project would not result in a noteworthy increase in vegetation disturbance or long-term changes in plant community.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Denial of the proposed lease modification/expansion would result no direct or indirect impacts to vegetation in the proposed expansion area.

Cumulative Effects: Denial of the proposed project would have little impact on the cumulative effect of oil and gas development impacts to the vegetative communities in the Ryan Gulch/Yellow Creek area or in the Piceance Basin as a whole.

Mitigation: None

Finding on the Public Land Health Standard #3 for Plant and Animal Communities:

Due to the historic, current, and future development of mineral resources and continued grazing in this area, the overall vegetative cover and productivity is diminished from the potential for this area. With implementation of mitigation measures and successful re-vegetation, the Proposed Action would likely increase vegetative cover and productivity to at least equal or possibly better than the surrounding landscape due to the application of reclamation measures, weed control and monitoring. Overall with successful reclamation of disturbances there would be no negative effect on the status of Land Health Standard 3 in the project area or at a landscape scale.

INVASIVE, NON-NATIVE SPECIES

Affected Environment:

The Colorado Noxious Weed Act (Title 35 Article 5.5, enacted 1996) defines noxious weeds as plant species that are not indigenous to the State of Colorado that aggressively invade or are detrimental to economic crops or native plants; are poisonous to livestock; are carriers of detrimental insects, diseases, or parasites; or the presence of the plant is detrimental to the environmentally sound management of natural or agricultural ecosystems. Recognized noxious weeds are grouped into three categories: Lists A, B, and C (Colorado Weed Management Association 2009).

Several List B and List C noxious (weed) species are known to occur in or adjacent to the proposed lease modification/expansion area and are listed in Table 6 below. List B includes species for which a state noxious weed management plan is required to stop their spread. List C includes species that are common in Colorado. Optional programs provide resources to governing bodies that choose to require management of List C species, however, prevention of these weed species is not state-mandated (CWMA 2009).

Table 6. Noxious Weeds In or Adjacent to the Lease Expansion Area (HWA 2011)

Noxious Weed (common name)	# Occurrences	Estimated Population Size	Occupied Area (m^2)	List Status
Bull thistle	4	<10	70	B
Canada thistle	1	<10	10	B
Halogeton	4	101-300	2,091	C

Diffuse knapweed	2	10-50	104	B
Common mullein	2	51-100	327	C
Cheatgrass	*Present*			C

These weed occurrences were located by Hayden-Wing Associates during summer surveys in 2011. Halogeton, a list C species, was abundant only near existing well pads. Most other weeds were near access roads and pipelines. Diffuse knapweed, a list B status species, was located near an existing access road. This species is not widespread in the Piceance Basin, and should be controlled and monitored closely.

In addition to the noxious weed species surveyed, the following non-noxious weedy species were observed: pinnate tansymustard (*Descurainia pinnata*), curlycup gumweed (*Grindelia squarrosa*), Russian thistle (*Salsola tragus*), desert madwort (*Alyssum desertorum*), yellow sweetclover (*Melilotus officinalis*), and lambsquarters (*Chenopodium album*).

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The 35 to 40 acres of surface-disturbance associated development actions in the lease modification/expansion area could create or exacerbate noxious weed problems by importing weed seed or plant parts (rhizomes) on vehicles and construction equipment and by creating suitable conditions in the form of non-vegetated disturbed areas. Cheatgrass establishment is very likely if disturbed surfaces are not reclaimed immediately following each disturbance. Diffuse knapweed should be controlled and monitored closely. The proposed monitoring for further infestation and application of weed control or eradication measures contained in NSI's approved Mine and Reclamation Plans would reduce the risk and effects of noxious weeds in the lease modification/expansion area.

Cumulative Effects: Noxious and invasive weeds present in the proposed lease modification/expansion area are primarily associated with existing areas of development/disturbance. Further development actions associated with this proposal would create additional opportunity for noxious/invasive weed establishment. Existing roads and development related disturbances throughout the general area are common sources of weeds so elimination of these species from the general area is unlikely. The extent of infestation and persistence of weeds would be dependent on monitoring and treatment as part of future projects and activities in the general Ryan Gulch, Yellow Creek, and Piceance Creek area. Proposed mitigation including long term weed control would reduce the likelihood of long term negative impacts associated with this proposal.

Environmental Consequences of the No Action Alternative

Direct and Indirect Effects: Noxious and invasive plants would continue to be present within the vicinity of the proposed lease modification/expansion area and, depending on the aggressiveness of weed treatment activities, may continue to spread.

Cumulative Effects: Cumulative effects would be similar to those from the Proposed Action.

Mitigation: None.

MIGRATORY BIRDS

Affected Environment:

Breeding birds associated with these shrublands nest principally from mid-May through mid-July with an estimated overall nest density of 0.5 to 1 nest per acre. Birds that have been categorized with higher levels of management attention include Brewer's sparrow (BLM-sensitive), green-tailed towhee and vesper sparrow (BLM Priority) in sagebrush habitats and juniper titmouse and pinyon jay (FWS Birds of Conservation Concern) and black-throated gray warbler (BLM Priority) in pinyon-juniper woodlands. Although these birds are distributed throughout the lease tract, the abundance and richness of both woodland and shrubland associated birds are substantially reduced as the density of young pinyon-juniper regeneration increases (providing marginal habitat for either group). Open-canopied woodlands, even when mature (e.g., west half of tract), tend to support fewer of the same species occurring in woodlands with better developed understories and denser canopies (e.g., east half of tract). The composition of woodland bird communities is also at is maximum in stands composed of more mature, well-structured canopies.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Migratory birds respond to disturbance by avoiding habitat closely associated with human activity. Migratory bird nest densities within 100 meters of travelled roads in sagebrush habitats have been found to support about half the density of nests in habitat more distant from roads (Ingelfinger and Anderson, 2004). Nesting birds likely react in a similar manner to drilling and completion activity and, to a lesser extent, through the productive life of the location, as well. Disuse of habitat adjacent to mine development activity represents an effective reduction in the availability of habitat for nesting and recruitment of young into the population. Contrary to the more persistent effects of adverse habitat modification or loss, however, there is no strong evidence to suggest that habitats vacated by birds intolerant of disturbance would not regain much of their former utility once intense activity subsides and affected acreage is contiguous with large tracts of intact and largely unaffected source habitat (Riffell et al. 1996). This mining technique does not require concentrated activity once the pad is constructed and the wells are producing, and it likely that much of the former utility of intact nesting habitat in close proximity to the pad would be regained prior to final abandonment.

Because migratory birds are relatively abundant and well-distributed across the WRFO during the nesting season, it is considered impractical for vegetation clearing or dirt work to avoid ongoing nest attempts from May 15 through July 15 (e.g., siting adjustments to avoid nests). Although these activities would not affect adult birds, direct destruction of nests or disturbances that lead to inopportune absences of brooding adults results in mortality of eggs or nestlings and the likely loss of that year's breeding effort. This outcome is not consistent with modern interpretations of the Migratory Bird Treaty Act. Although imposing activity deferrals extends protection to a single reproductive effort during the initial year of development, reduction in the availability of nesting habitat and avoidance behavior persists through the operational life of the feature or facility and have more substantive implications on population-level depression of breeding bird abundance. Facility occupation or adverse modification of habitat (clearing of shrubland or woodland types), no matter when conducted, eliminates the potential of that habitat

to produce or recruit birds into the population for a minimum 1-2 decades in shrublands and more than a century for mature woodland associates. Rather than merely applying a blanket timing limitation during the nest season, more comprehensive and meaningful management in this instance would likely involve the avoidance of more optimal nest habitat.

Assuming vegetation clearing and facility/feature siting would involve habitat proportionate to its availability, it could be projected that, over the life of the lease, about 15-20 acres of pinyon-juniper woodland and 20-25 acres of sagebrush shrubland would be converted to either industrial use or a reclaimed herbaceous community. Except for reclaimed ground cover that would suffice for ground-nesting birds (e.g., western meadowlark, vesper and lark sparrow), there would be little redevelopment of nesting substrate for woodland or shrubland associates over the operational life of the lease. The character of nesting habitat available on this lease, however, opens opportunities to emphasize facility and feature siting in habitats supporting lesser nest densities (e.g., about 50 percent of optimal in conifer-encroached sagebrush, near existing permanent sources of disturbance, and early seral, open-canopied, or smaller patches of woodland). Siting objectives developed for big game (see Terrestrial Wildlife section) are also appropriate for stratifying the quality of nesting habitat for migratory birds. By emphasizing facility occupation and vegetation clearing in those habitats that support lesser densities of nests, both shorter term avoidance-related effects and longer term habitat-related effects would be minimized to the greatest practical extent.

Cumulative Effects: The influences of solution mining operations are considered similar to those imposed on migratory birds by more extensive fluid mineral development in the Piceance Basin. Although contributing incrementally to long-term habitat modification and disturbance-induced disuse of nesting habitat, the level of effect within the mine area would likely remain relatively static at present levels. The lease modification would simply prolong these effects. Based on projections in the draft White River Oil and Gas RMP Amendment, migratory bird effects attributable to lease development would be integral with effective habitat losses on the order of 5 or 6 percent.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no physical or behavioral influences imposed on migratory bird nesting habitat or activity associated with the lease tract. There would be no use authorized that would have potential to exert direct or indirect impacts on migratory birds or associated habitats.

Cumulative Effects: Minor contributions to habitat modification and disturbance of migratory bird nesting activity would be avoided, but the effects of this reservation would yield no tangible benefit to the distribution or abundance of breeding birds in the Piceance Basin.

Mitigation:

1. Where practical, schedule pad and pipeline construction and drilling and completion operations to avoid the core migratory bird nesting season (May 15 to July15).

See also Terrestrial Wildlife Mitigation.

TERRESTRIAL WILDLIFE

Affected Environment:

The entire lease tract is encompassed by deer severe winter range and winter concentration area. These important winter ranges, by definition, support concentrated use by most of the deer wintering in a unit under the most severe winter conditions. The location and configuration of this lease represents a 0.25 mile southward extension of the existing mine's 300-acre well-field and processing operation. The tract (1 mile x 0.25 mile) is bisected by an all-weather well access road and parallel pipeline, and is framed by a paved county road and an all-weather access for ongoing natural gas development on its west and east ends and a major native surface county road along its southern boundary. This lease tract is also coincident with the operator's existing RD&D oil shale lease tract and abuts an adjacent RD&D oil shale lease on its west edge, where operations are expected to commence soon.

The woodland stands associated with the lease tract have a history of nesting use by woodland raptors, especially Cooper's hawk, red-tailed hawk, and great-horned owl (8 nest sites within 0.25 mile of the tract boundary). Since 2008, monitoring data suggests that the lease tract may be integral with the support of two pair of Cooper's hawks. The largest woodland stand encompassed by the lease tract has a single known nest site, though its condition has deteriorated from non-use since at least 2010. Vegetation associations pertinent to wildlife resources on the lease tract are summarized in Table 7.

Table 7.

Vegetation Type	Acres	Percent of Lease
Moderate density pinyon-juniper woodland (east half of lease)	37	24%
Open-canopy pinyon-juniper woodland (west half of lease)	24	15%
Wyoming big sagebrush	40	25%
Pinyon-juniper encroached sagebrush (variable density)	43	28%
Disturbed and reclaimed land	13	8%
Total	157	100%

These vegetation communities are distributed and arranged in a manner similar to surrounding habitats. About half of the total sagebrush shrublands are in advanced seral states where young pinyon-juniper regeneration is expressing itself as light to moderate density encroachment. Ultimately it is projected that 35 to 45 acres of the 156 acre lease would be disturbed through lease life or roughly 25 to 30 percent of the tract. It is likely that, at any given time, most of the disturbed acreage would be in various stages of reclamation and becoming recolonized by naturally dispersing rubber rabbitbrush and Wyoming big sagebrush.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Although 35 to 45 acres of the lease tract is projected to be physically disturbed by well development and mining infrastructure, most of this disturbance

would be reclaimed such that reductions in the availability of herbaceous forage for big game (spring and fall use) would be temporary and minor. The loss of sagebrush forage, as a winter staple, would be longer term, but sagebrush as a forage base is widely distributed and comprises a substantial fraction of the local landscape. Any reduction in the woody forage base would also be partially compensated in the near term by the more rapid redevelopment of rubber rabbitbrush on reclaimed lands.

The more pervasive and serious consequence of lease development activity on these ranges is the tendency for big game to avoid and displace from human activity (Sawyer et al. 2009). Avoidance of human activity, regardless of form, has important ramifications on big game energetics (e.g., avoidance movements, heightened state of alert) and nutrition (e.g., reduced time foraging and access to available forage, displacement from preferred foraging sites) that, in turn, have consequences on fitness and performance (e.g., survival, reproduction) at the individual and population level. As effective forage availability becomes increasingly constrained by removal or avoidance response, it is inevitable that the capacity of the range to support former numbers of animals would deteriorate and eventually increase the probability of density-dependent adjustments in animal abundance. Bartmann et al. (1992) demonstrated strong nutritionally-driven density-dependent winter mortality in mule deer in the Piceance Basin. Wintering mule deer populations subject to the influences of natural gas development in Wyoming declined 30 percent while unaffected portions of the herd declined 10 percent (Sawyer 2009b final report).

Sawyer et al. (2009) found that avoidance distances progressively increased from gas pads with higher levels of vehicle traffic and suggested that decreasing the daily vehicle passes during a pad's production phase from about 8 to 3 (i.e., transport of produced fluids via pipeline versus truck) reduced the surrounding area avoided by deer (i.e., indirect habitat loss) by 38-63 percent. Reducing the frequency of vehicle use is analogous to the imposition of timing limitations that reduce the extent and intensity of human activity during periods of animal occupation. There is also recent work suggesting that deer and elk are behaviorally capable of becoming conditioned to long established patterns of activity within mature oil and gas fields (road density ~3.9 miles per square mile, 4.6 pads per square mile) and making efficient use of resources by making advantageous use of topographic and vegetation cover (Webb et al. 2011).

Lease development activity would prompt deer avoidance and disuse of available habitat, but by design, development would be spatially limited, clustered, and progressive, such that activity would be confined to relatively small portions of the entire lease holding and the disruptive influence of expanded development would be partially offset by declining activity on producing well pairs and well pads with depleted cavities. Development activity, consistent with mitigation imposed on the original lease, would be subject to winter big game timing limitations. Although impossible to detail at the leasing stage, the influence of development on forage loss and winter range utility may be moderated to some degree by siting developments and well access in positions more advantageous for big game in the long and short term (e.g., locating pads in less productive sites, both in terms of forage production and permanent disturbance sources, and in positions that are less likely to compromise the effectiveness of concealing cover). Planning-level and project-specific considerations to keep more continuous and cohesive woodland and sagebrush stands intact and avoid more productive habitats as much as practicable would, from

the cumulative perspective, be warranted. Surface siting objectives that would ostensibly aid in maintaining the desirable interspersion of forage and cover resources and the longer term utility of winter range habitat include locating disturbances:

- on stand edges (i.e., avoiding bisect of or centralized disturbance in larger habitat patches);
- more closely to existing long-term sources of disturbance (e.g., county roads);
- in smaller or disconnected patches rather than larger and more cohesive stands;
- among more heavily encroached shrubland;
- in less mature/more open canopy woodland types;
- in stands with more poorly developed understories; and
- in stands more strongly influenced by invasive annuals or introduced grazing-tolerant grasses.

These objectives would apply equally to shrublands or woodlands.

It is standard operating procedure to perform woodland raptor nest surveys, either by the operator or BLM, prior to authorization of surface disturbances. The results of these surveys provide the basis to move well pads or well access a minimum of 200 meters and/or defer operations through the nesting season to provide sufficient separation/isolation between nest sites and development activity to: 1) maintain the integrity of the nest stand for current and subsequent nesting functions, and 2) prevent disruption of ongoing nesting attempts that may lead to disturbance-induced absences of the adult birds sufficient to jeopardize the survival of eggs or nestlings (e.g., chilling, malnourishment, predation). Considering the siting provisions discussed above for big game (i.e., coincidentally avoiding reductions in the availability of woodland stands of sufficient extent for nesting habitat) and the avoidance prescriptions that mimic raptor nest NSO and TL stipulations, it is unlikely that lease development would have any substantive influence on woodland nesting raptors that rely directly or indirectly on habitat within the lease or regional raptor populations in general.

Cumulative Effects: Lease development, as conditioned, would not be expected to contribute substantially to cumulative direct and indirect impacts on wintering big game or the availability or utility of their habitat. The lease tract itself is bounded on all sides by ongoing nahcolite and natural gas development and production activity and prospective oil shale RD&D development. These activities, as well as the use of county and unrestricted BLM routes by industry and the public, are likely to persist through the term of this lease. Lease development would, however, generally extend the incremental influences presently imposed on local big game and woodland nesting raptors by this nahcolite mining operation.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Entrenched in ongoing mineral development operations and slated for development as an oil shale RD&D, it is unlikely that this lease tract, left undeveloped for nahcolite minerals, would have any substantive beneficial influence on big game or raptor nest habitat as a refugia or source of important forage or cover resources.

Cumulative Effects: There would be no cumulative influence of nahcolite mining on local wildlife habitat, but the increment of cumulative influences generated by lease development

would likely be small and masked by adjacent and coincident mineral developments over the prospective term of the lease.

Mitigation:

1. Surface disturbing activities involving pad, pipeline, or access preparation or construction, the drilling and completion of wells, and routine activity-intensive maintenance and production activities would not be allowed on this lease between December 1 and April 30 to reduce cumulative impacts on wintering big game. This timing restriction would be subject to most-current exception and modification provisions developed in the White River RMP, as amended.

2. Lease developments would be subject to siting considerations that are intended to reduce long term and residual impacts on the utility and continued availability of suitable shrubland and woodland wildlife habitat in the lease tract. It is recommended that the operator consider these objectives to the extent practicable when planning lease development operations. These objectives would be used, where appropriate, by WRFO staff during project-specific on-sites and NEPA analysis to develop siting adjustment recommendations to meet those objectives. Siting considerations would apply equally to shrubland or woodland habitats and may include, but are not limited to, locating pads, access and pipeline corridors in the following manners:
    - on stand edges (i.e., avoiding the bisect of, or a centralized disturbance source in larger habitat patches);
    - more closely to existing long-term sources of disturbance (e.g., county roads);
    - in smaller or disconnected patches rather than larger and more cohesive stands;
    - among more heavily pinyon-juniper encroached shrubland;
    - in less mature/more open canopied woodland types;
    - in stands with more poorly developed understories; and
    - in stands more strongly represented by invasive annuals or introduced grazing-tolerant grasses.

Finding on the Public Land Health Standard #3 for Plant and Animal Communities:

The project area is generally influenced by adjacent mining activity and surrounding oil and gas developments, but retains utility as big game, raptor, and migratory bird nesting habitat. Although the availability and character of shrubland and woodland habitats encompassed by the lease would be modified in the long-term, the utility of the land base would be principally affected by mining activity rather than habitat modification. These behavioral effects are considered reversible and are expected to diminish as mining activity subsides. As proposed and conditioned, lease modification would simply prolong current levels of mining activity and habitat within the lease would continue to function as part of a landscape-level matrix consistent with continued meeting of the land health standard, though temporarily at somewhat reduced levels.

CULTURAL RESOURCES

Affected Environment:

A Class III cultural resource inventory of approximately 150 acres of the lease tract was conducted by Metcalf Archaeological Consultants in July 2011 (Elkins 2011 compliance dated 10/6/2011). An additional 20.5 acres was excluded from survey as it was covered by two prior surveys (Schwendler et al 2008 compliance dated 2/11/2009, O'Neil 1995 compliance dated 11/20/1995). The 2011 survey resulted in the update of one previously recorded historic artifact scatter (5RB5926) and the documentation of two new isolated finds (5RB6758 and5RB6759). In addition, a previously recorded prehistoric lithic scatter (5RB396) is located within the previously inventoried portion of the parcel. Site 5RB5926 and isolated finds 5RB6758 and 5RB6759 are Officially Not Eligible for the National Register of Historic Places (NRHP) because they lack additional research potential, so no further work is recommended for these sites. Site 5RB396 has been determined Officially Needs Data by the Colorado Office of Archaeology and Historic Preservation (OAHP) because of its potential for buried cultural deposits.

The proposed lease area contains a large amount of existing disturbance mainly from well-used roads and an abandoned well. NSI's existing active nahcolite well field is located immediately to the north of the newly proposed lease area, and Rio Blanco County roads RBC 24 and RBC 31 provide access to the lease area from Piceance Creek to the east.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Potential impacts to cultural resources from the proposed action include potential destruction of identified cultural sites and the possibility of illegal collection activities.

Site 5RB396 must be avoided by any construction activities that occur within the lease area in order to have no effects to cultural resources. Potential adverse affects to site 5RB396 can be avoided by ensuring maintenance of a 100 meter (330 feet) buffer from the site boundary, as recommended by the BLM White River Field Office. Complete avoidance of the 100- meter site buffer will require a relocation of some NSI facilities. The site of the relocated facilities would be determined based on consultation between the BLM and NSI.

Cumulative Effects: Pending evaluative testing of site 5RB396 it is not known if historic properties, as defined in the regulations at 36 CFR 800.4(c)(2),are present and it is, not possible to determine if there will be an adverse effect to historic properties. The sites and isolated finds that are not considered historic properties under the regulations cited above represent some information about human occupation of the area but it is likely that all data that can be derived from those sites has already been collected. The loss of data from the regional archaeological data base is considered negligible though the loss is permanent, long term, irreversible and irretrievable.

Provided the stipulation to avoid 5RB396 is strictly adhered to and the site is protected there should be no adverse affects to historic properties.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Under the No Action Alternative the sodium mining operation would not expand and there would be no new impacts to any cultural resources or historic properties as a result of sodium mining operations. The impacts, if any, from oil shale research and development would continue as described in the EA for the Colorado Oil Shale Research, Development, and Demonstration (RD&D) Lease tract Project (DOI-BLM-CO-110-2011-EA).

Cumulative Effects: Erosion and any increases on human activity associated with the operation of the existing sodium mine to the north and the operation of the oil shale RD&D lease would continue as before. Should erosion expose previously unknown cultural resources there could be an increase in loss of scientific data. The oil shale RD & D lease has stipulations to cover resources discovered during oil shale mining operations. However, there would still likely be some small, currently unquantifiable loss of scientific data from the regional archaeological database.

Mitigation:

1. The holder is responsible for informing all persons who are associated with the project that they will be subject to prosecution for knowingly disturbing archaeological sites or for collecting artifacts.
2. If any archaeological materials are discovered as a result of operations under this authorization, activity in the vicinity of the discovery will cease, and the BLM WRFO Archaeologist will be notified immediately. Work may not resume at that location until approved by the AO. The holder will make every effort to protect the site from further impacts including looting, erosion, or other human or natural damage until BLM determines a treatment approach, and the treatment is completed. Unless previously determined in treatment plans or agreements, BLM will evaluate the cultural resources and, in consultation with the State Historic Preservation Office (SHPO), select the appropriate mitigation option within 48 hours of the discovery. The holder, under guidance of the BLM, will implement the mitigation in a timely manner. The process will be fully documented in reports, site forms, maps, drawings, and photographs. The BLM will forward documentation to the SHPO for review and concurrence.
3. Pursuant to 43 CFR 10.4(g), the holder must notify the AO, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), the holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
4. No new surface disturbance is permitted within T 1S, R 98W, Sec 35 NENE of Lot 4, and T 1S, R 98W, Sec 35 N1/2NW of Lot 3.

PALEONTOLOGICAL RESOURCES

Affected Environment:

The proposed sodium lease modification is located in an area generally mapped as the Uintah Formation (Tweto 1979) which the BLM has categorized as a Potential Fossil Yield

Classification (PFYC) 5 formation. A PFYC 5 formation is a sedimentary rock that is known to produce scientifically important fossil resources.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Should it become necessary to excavate into the underlying sedimentary rock, to construct and bury pipelines, level well pad locations for well drilling or leveling the area for roads there is a high potential to impact fossil resources during those activities.

Drilling of well bores also has the potential to impact scientifically important fossil resources. However, identifying and evaluating any fossils that might be impacted by the drilling activity is almost totally impossible. These losses would constitute an unknown but potentially serious loss of scientific data from the regional paleontological database.

Indirect impacts could potentially include increased erosion as a result of development related soil disturbances. Increased human activity could potentially result in an increase in unlawful fossil collection, particularly if development activity should increase exposure of the underlying rock

Cumulative Effects: Any loss of fossils or the contextual data that might have been associated with the fossils would constitute a permanent, long term, irreversible and irretrievable loss of data from the regional paleontological database.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no new development related direct or indirect impacts to fossil resources under the No Action Alternative, as far as sodium development is concerned. Impacts from development of the oil shale resources would continue as described on Page 118 of DOI-BLM-CO-110-2011-0177-EA which identifies the increase in the potential for the direct loss of scientific information, illegal fossil collection, and increase in paleontological knowledge base of the area.

Cumulative Effects: Cumulative impacts under the No Action Alternative would be the same as those described on page 119 of DOI-BLM-CO-110-2011-0177-EA as the activity related to the oil shale RD&D lease would likely continue.

Mitigation:

1. The holder is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate or other scientifically important fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
2. If any paleontological resources are discovered as a result of operations under this authorization, the holder or any of his agents must stop work immediately at that site, immediately contact the BLM Paleontology Coordinator, and make every effort to protect the site from further impacts, including looting, erosion, or other human or natural

damage. Work may not resume at that location until approved by the AO. The BLM or designated paleontologist will evaluate the discovery and take action to protect or remove the resource within 10 working days. Within 10 days, the operator will be allowed to continue construction through the site, or will be given the choice of either (a) following the Paleontology Coordinator's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (b) following the Paleontology Coordinator's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.

3. Any excavations into the underlying native sedimentary stone must be monitored by a permitted paleontologist. The monitoring paleontologist must be present before the start of excavations that may impact bedrock.

VISUAL RESOURCES

Affected Environment:

Visual resources are the visible physical features of a landscape that convey scenic value. The BLM developed the Visual Resource Management system to identify and evaluate an area's scenic value. The visual resource inventory (VRI) process described in BLM Manual H-8410-1 establishes VRI classes, which are used to assess visual values for areas of the landscape. VRI Classes II, III, and IV are determined by using a combination of three components: scenic quality, sensitivity level, and distance zones, with Class II having a higher level of value and Class IV having the least visual value. VRI Class I areas are assigned to special management areas, such as Wilderness Study Areas, which are the most valued landscapes. The VRI classes are the baseline from which environmental effects are measured. The Proposed Action is located in Visual Resource Inventory Class IV, which means this area is a lesser valued scenic landscape. This area of the landscape was placed into VRI Class IV as a result of a composite of the three above mentioned components. The area received a Scenic Quality scoring of C, which is the lowest rating (A, B, and C type rating), because of the amount of oil and gas development and mining activity in the area. Other determining factors for the VRI Class IV rating for this area were a result of the Sensitivity Level rating as moderate value to the public, and the project being located in a Distance Zone of background. Based on the sensitivity level rating unit 12 in the October 2011 WRFO Visual Resource Inventory, this area of the landscape receives heavy use but is highly modified by oil, gas, and mineral developments.

The BLM also maintains four Visual Resource Management (VRM) classes used to describe the level of acceptable change allowable at a given location. Scenic values in the BLM White River Resource Area have been classified according to the Visual Resource Management (VRM) system into four Visual Resource Management Classes (I-IV), and corresponding VRM objectives were established in the 1997 White River ROD/RMP. VRM Class I are the most restrictive with VRM Class IV being the least restrictive for the amount of allowable change to occur on the landscape. The VRM objectives provide the amount of allowable change and are considered a resource-allocation. The proposed action is located within a VRM Class III area. The objective of the VRM III classification is to partially retain the existing character of the landscape. The level of change to the characteristic landscape in VRM III areas should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The Proposed Action is located in the Piceance Basin in an area of dense oil, gas and mineral development just north of Rio Blanco County (RBC) Road 83 (Bar D Mesa) and west of RBC Road 31. The landscape consists of nearly flat to gentle rolling ridges that separate the Piceance Creek drainage on the east from the Yellow Creek drainage on the west. The existing character of the landscape is modified in many areas and somewhat natural in others with several oil and gas related developments and mineral developments modifying the natural landscape in the area, such as well pads, access roads, pipeline corridors, and associated support facilities. The panoramic-type landscape and dominant form visual element is defined by the gentle flat rolling ridges and gentle sloping dry drainages. Dark green scattered pinyon-juniper along the ridges and on the slopes, contrasting with the exposed buff colored soils provides the texture visual element to the landscape. Typical casual observers of any subsequent development of the lease modification would most likely consist of energy development employees traveling to and from work sites in the area. Other casual observers that may notice any subsequent development of this lease modification may include a low amount local ranchers, big game hunters, and OHV riders.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The act of modifying the existing Natural Soda lease to include an additional approximately 156 acres would not cause any impacts to visual resources. However, the likely subsequent development of this lease modification could have some indirect impacts to visual resources. A site specific NEPA analysis would completed for future proposed projects involving the development of this portion of the lease. It is anticipated that development within the modification area could involve the surface disturbance of approximately 35 to 45 acres if geologic conditions remain constant and current solution mining technologies are utilized for development. Surface disturbance would include; mining well pairs, exploration/monitoring wells, access roads, and associated well field pipelines. Pipelines would be on the surface supported on stanchions or blocks, insulated, and typically adjacent to access roads. Access roads are built with consideration to the duration of use. Utilization of current mining methods could require 18 well pairs and over 25 years of mining for development of the modification area. These activities would be most noticeable to the casual from small sections of RBC Road 31 and RBC Road 83. These types of ground disturbing activities would not change the VRI Class IV and would be in conformance with the VRM Class III objectives so long as typical best management practices for these types of activities for reducing visual contrast are implemented. These best management practices to reduce contrast with the surrounding landscape for these activities in these type of setting may include but not limited to: color treat structures to reduce contrast with existing landscape, minimize project footprint and associated disturbance, retain vegetative screening where possible, and site and design facilities in previously developed or disturbed landscapes where possible.

Cumulative Effects: Combined with other existing, ongoing, and foreseeable oil and gas development and mining development activities in the area, the proposed action may begin to contribute to an increasingly impacted visual landscape.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Because this lease would not be modified, there would be no new impacts to visual resources in this area as a result of this alternative.

Cumulative Effects: None have been identified as a result of this project.

Mitigation: None.

HAZARDOUS OR SOLID WASTES

Affected Environment:

There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored, or disposed of at sites included in the project area.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The proposed activities may use regulated materials and will generate some solid and sanitary wastes. The potential for harm to human health or the environment is presented by the risks associated with spills of fuel, oil and/or hazardous substances used during sodium drilling operations. Other accidents and mechanical breakdowns of machinery are also possible.These activities may pose direct and indirect impacts to soil, water, air, and biological resources that occur in close proximity to individual disturbance features. Impacts to these resources may also occur at farther distances from individual disturbance features, though it is assumed that these impacts would be reduced because of proximity to the point source. Accidents and mechanical breakdown may also have direct and indirect effects to resources depending on the type of accidents or mechanical breakdown and when and where they occur.

Cumulative Effects: Effects to soil, water, air, and biological resources as a result of cumulative release of hazardous materials into the environment are unknown. Because some hazardous substances persist in the environment, it is reasonable to assume that multiple activities that may occur throughout the project area that result in the release of individual hazardous material spills or discharge events, may cumulatively result in impacts to soil, water, air, and biological resources. However, freshwater-bearing formations and other resources suitable for human use or consumption are isolated from man-made materials used in sodium recovery and oil and gas operations through the use and cementing of surface casing, see 43 CFR 3162.5-2(d).

Environmental Consequences of the No Action Alternative:

No hazardous or other solid wastes would be generated under the No Action Alternative.

Direct and Indirect Effects: No regulated materials or waste would be associated with the proposed well under the No Action Alternative.

Cumulative Effects: Cumulative effects are the same as those analyzed in the Proposed Action in terms of the type of disturbance. In terms of duration and extent, however, this alternative would most likely result in reduced cumulative impacts because of the existing development in the project area, rather than the new proposed well pad.

Mitigation:

1. Comply with all Federal, State and/or local laws, rules and regulations addressing the emission of and/or the handling, use, and release of any substance that poses a risk of harm to human health or the environment. All spills or leakages of oil, gas, produced water, toxic liquids or waste materials, blowouts, fires, shall be reported by the operator in accordance with the regulations and as prescribed in applicable orders or notices.
2. Where required by law or regulation to develop a plan for the prevention of releases or the recovery of a release of any substance that poses a risk of harm to human health or the environment, provide a current copy of said plan to the BLM WRFO.
3. All substances that pose a risk of harm to human health or the environment shall be stored in appropriate containers. Fluids that pose a risk of harm to human health or the environment, including but not limited to produced water, shall be stored in appropriate containers and in secondary containment systems at 110% of the largest vessel's capacity. Secondary fluid containment systems, including but not limited to tank batteries shall be lined with a minimum 24 mil impermeable liner.
4. Construction sites and all facilities shall be maintained in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
5. As a reasonable and prudent lessee, acting in good faith, all lessees and right-of-way holders will report all emissions or releases that may pose a risk of harm to human health or the environment, regardless of a substance's status as exempt or nonexempt and regardless of fault, to the BLM WRFO (970) 878-3800.
6. As a reasonable and prudent lessee and right-of-way holder, acting in good faith, all lessees and right-of-way holders will provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any substance that may pose a risk of harm to human health or the environment, regardless of that substance's status as exempt or non-exempt. Where the lessee/operator or right-of-way holder fails, refuses or neglects to provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any quantity of a substance that poses a risk of harm to human health or the environment, the BLM WRFO may take measures to clean-up and test air, water (surface and/or ground) and soils at the lessee/operator's expense. Such action will not relieve the lessee/operator of any liability or responsibility.

FOREST MANAGEMENT

Affected Environment:

The Proposed Action is located within a productive exposure stand classes of Pinyon/Juniper woodlands as defined by a survey performed in 2003-2005 by White River Field Office personnel. Productive exposure types occur on primarily lower gradient slopes as well as on

north and east aspects. Growth rates are higher in these areas due to soil features which allow for effective use of precipitation. This habitat type is further broken down based on the age class of the stand. In this case the affected stand is a mature stand. Mature pinyon/juniper trees on productive exposure establish themselves as the dominant plant community on the site. Mature stands are valuable locally as a source of fire wood and craft wood.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Table 8 shows the estimated loss of woodland acres as a result of the Proposed Action. Following reclamation of it is expected that pinyon and juniper will invade the site within 50 to70 years and would develop a mature stand within 200 to 300 years. Under the Proposed Action about 35 to 45 acres of woodlands could be removed from the lease modification area over time. Impacts would be long-term until woodlands regenerate successfully.

Table 8. Estimated Loss of Woodlands

Project Name	Acreage In Woodlands		
	Acres Disturbed (Total)	Stand Class	Total Cords
Natural Soda Inc. Lease Modification COC119986-01	45	Pinyon Juniper Dry Exposure/Productive Mature/Young	270

Cumulative Effects: Removal of mature and middle-aged pinyon/juniper trees would reduce the potential for outbreak of woodland diseases and pest infestations. By reducing the stand size of pinyon/ juniper trees in areas historically included in sagebrush and grass communities, it would increase the open areas preferred as foraging areas by wildlife and livestock. Acceptance of mitigation measures would reduce the build-up of cleared woody material from the Project Area, reducing the likelihood of slash contributing to possible large fire.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Under this alternative there would be no modification to the current Natural Soda RD&D lease and there would be no removal of pinyon/juniper woodlands.

Cumulative Effects: Under this alternative, pinyon/juniper would not be removed. The current pinyon/juniper stand will continue to age eventually becoming an old growth stand that could be utilized by wildlife and raptors.

Mitigation:

1) In In accordance with the 1997 White River RMP/ROD, all trees removed in the process of construction must be purchased from the BLM. Trees should first be used in reclamation efforts and then any excess material made available for firewood or other uses.
   a) Woody materials required for reclamation must be removed in whole with limbs intact and stockpiled along the margins of the authorized use area separate from the topsoil

piles. Once the disturbance has been recontoured and reseeded, the operator will scatter stockpiled woody material across the reclaimed area where the material originated. Redistribution of woody debris will not exceed 20% ground cover. Limbed material must be scattered across reclaimed areas in a manner that avoids the development of a mulch layer that suppresses growth or reproduction of desirable vegetation. Woody material will be distributed in such a way to avoid large concentrations of heavy fuels and to effectively deter vehicle use.

b) Trees that must be removed for construction and are not required for reclamation will be cut down to a stump height of 6 inches or less prior to other heavy equipment operation. These trees will be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.

RANGELAND MANAGEMENT

Affected Environment:

The Proposed Action occurs mostly in the Upper Yellow Creek pasture and to a lesser extent the North Ryan pasture of the Square S Allotment (#06027). From DOI-BLM-CO-110-2011-0177-EA, the total allotment consists of 75,739 acres, including 64,050 federal acres, 9,437 State of Colorado acres, and 2,252 private acres. The Square S allotment is permitted to both the LOV Ranch (504241) and the Mantle Ranch (501432) for livestock grazing totaling 3,522 AUMs. The Upper Yellow Creek pasture is grazed by cattle belonging to the LOV Ranch and the North Ryan pasture is grazed by livestock belonging to the Mantle Ranch.

Rangeland carrying capacity is typically estimated on the basis of the Animal Unit Month (AUM). The AUM is defined as the amount of forage needed by an "animal unit" grazing for one month. The animal unit in turn is defined as one mature 1,000-pound cow and her suckling calf (43 CFR 4130.8-1 (c)). Assuming that such a cow nursing her calf will consume about 26 pounds of dry matter per day as forage, combined with a factor for tramping and waste of about 25 percent, results in an estimate of about 1,000 pounds of dry matter from forage to supply one AUM.

Range Improvements: There are two rangeland improvement projects in the immediate area associated with the proposed lease modification. Range improvement project #204420, the Yellow Creek pipeline lateral, crosses through the west half and through the southeast corner of proposal area. This water pipeline was constructed in 1973 to provide dependable upland water sources for cattle through an approximately 30 square mile area spread through four different pastures and is essential to achieve livestock distribution through these areas. The division fence between the North Ryan and Upper Yellow Creek pastures crosses diagonally through the east half of the proposal area. This fence is necessary to keep livestock owned by both LOV Ranch and Mantle Ranch in their respective use areas. Both of these projects are critical elements of the overall livestock management in this area. Their functionality must be maintained throughout the life of these projects.

The closest long term trend monitoring sites are approximately 3,000 feet north and 7,300 feet northeast of the proposed lease modification/extension and would not be affected by this project.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Livestock grazing during the authorized periods of use would continue throughout the duration of the project. The primary impact to the grazing resource would be short-term loss of available forage as a result of construction and production-related disturbance. There would be some long-term loss due to physical structures replacing the pre-disturbance vegetation. Currently, the Square S allotment public lands have 3,522 AUMs permitted for 64,050 acres of public land, a stocking ratio of an average 18.2 acres per AUM. The proposed lease modification/expansion occurs in an area accessible to livestock for grazing use. In addition to direct forage loss, livestock are likely to avoid grazing in areas close to active construction and drilling activities.

Some of the projected forage loss would likely not occur as successfully reclaimed sites associated with other projects in the area have been shown to out-produce the later-seral undisturbed vegetative cover, especially in mature PJ and sagebrush dominated sites—both in total available biomass and forage quality. Improved rangeland carrying capacity on reclaimed lands has been observed in lands immediately to the east where PJ has been cleared for pipeline and power line ROWs.

Short-term and long-term incremental disturbance of 35 to 45 acres associated with implementation of the proposed development actions would result in the long-term loss of less than 3 total AUMs. Most or all, of this disturbance will be in the Upper Yellow Creek pasture. The disturbance would be incremental and to some degree be off-set by partial reclamation of each well-pair, pipeline, and access road disturbance.

Until construction disturbances are successfully reclaimed there would be a short-term loss of less than one AUM in the Horse Draw pasture. After successful final reclamation, there would likely be a slight increase in forage production until the site progresses to a woody dominated site. The short-term forage loss within this pasture would be less than the annual fluctuation in forage production and would not be expected to result in any need for changes in livestock numbers or grazing period.

Development activities could interfere with proper functioning of the range improvements associated with the proposal area. The fence and water line in this area are necessary for control of cattle, to achieve grazing objectives in the affected pastures, and to keep cattle from straying into the wrong grazing use area. Damage to fences or gates left open would interfere with control of cattle and ultimately, with proper utilization of the rangeland resource. Damage to watering facilities could affect water availability and distribution of livestock, resulting in increased grazing pressure on areas that have water available for livestock. These impacts would be greatest during development, especially if it coincides with the livestock use period in this area (early summer). After each development action is complete, livestock will likely be minimally affected or even unaffected by the presence of well pairs or pipelines. Livestock grazing use in the early summer would likely reduce the success of re-vegetation efforts unless they are fenced.

Cumulative Effects: Agriculture, road development, and oil and gas development, which have the potential to impact rangeland management, would continue to occur. The Proposed Action would remove forage temporarily in the above mentioned grazing pastures. After project construction has been completed and grass/forb communities have returned, the Proposed Action would contribute to a slight increase in forage for livestock in the area.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct and/or indirect effects to rangeland management under the No Action Alternative.

Cumulative Effects: Activities associated with agriculture, road development, mineral extraction, and oil and gas development would continue to occur at about the current rates and intensities in the general area, which has the potential to impact rangeland management by removal of forage, impacts to range improvements, etc.

Mitigation:

1. Prior to any construction, a representative will coordinate with the appropriate WRFO Rangeland Management Specialist (970) 878-3800 to conduct a field inspection of the rangeland improvement project (water line) and address how to relocate the waterline and ensure that it is fully functional.
2. The lessee will repair any future damage caused to this water line caused by development or operational activities.
3. Any damage caused to the pasture division fence caused by development or operational activities must be repaired to BLM specifications in a timely manner (to prevent livestock movement between these two pastures).
4. If it becomes apparent that livestock grazing use is negatively impacting establishment of seeded areas, fence those areas for a minimum of two to three growing seasons to prevent them from being grazed before they are adequately established. Installation, maintenance and removal of any fencing are the responsibility of Natural Soda. Any fencing installed must be built to BLM specifications.

REALTY AUTHORIZATIONS

Affected Environment:

A number of roads, pipelines, and other linear facilities have been developed in existing ROWs within the tracts proposed for lease modification. Table 9 indicates existing ROWs located within the lease modification area.

Table 9. Existing Rights-of-Way within the Lease Modification Area

Case File	Holder	Authorized Use
COC40613	Natural Soda Inc	Natural gas pipeline
COC57625	Natural Soda Inc	Drill pad site
COC50065	Qwest Corporation	Telephone cable

COC53195	Rio Blanco County	County Road 31
COC67980	Enterprise Gas Processing LLC	Pipelines
COC69548	Enterprise Gas Processing LLC	Pipelines
COC70648	Enterprise Gas Processing LLC	Pipelines
COC72181	Williams Northwest Pipeline	Pipeline
COC73180	WPX Energy Rocky Mountain LLC	Water pipelines
COC73845	WPX Energy Rocky Mountain LLC	Water pipelines
COC75171	WPX Energy Rocky Mountain LLC	Water pipelines
COC67991	Bargath LLC	Natural gas pipelines
COC73844	Bargath LLC	Natural gas pipelines
COC74615	White River Electric Association Inc	Power line
COC75517	White River Electric Association Inc	*Pending power line*

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Rights-of-way would be required for any off-lease facilities. Damage to the facilities or rights of existing ROW holders could occur if activities are not properly planned and other ROW facilities are not properly identified prior to construction.

Cumulative Effects: As the number of ROW holders in the project area increases so would competition for suitable locations for facilities.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Failure to authorize the proposed lease modification would not result in any increased impacts to realty authorizations in the area.

Cumulative Effects: There would not be any cumulative effects from not authorizing the proposed lease modification.

Mitigation:

1. Coordinate with existing ROW holders (Qwest, Rio Blanco County, Enterprise Gas Processing, Williams Northwest Pipeline, WPX Energy Rocky Mountain, Bargath, and White River Electric Association) prior to any construction activity.

RECREATION

Affected Environment:

The Proposed Action is located within the White River Extensive Recreation Management Area (ERMA) on BLM lands administered by the WRFO. The WRFO manages the ERMA to provide for unstructured recreation activities, and a diversity of outdoor recreation opportunities, including hunting, dispersed camping, hiking, horseback riding, wildlife viewing, and off-highway vehicle (OHV) use are to be maintained and protected.

On BLM-administered lands, the Recreation Opportunity Spectrum (ROS) is a classification system and a prescriptive tool used for recreation planning and management. The Proposed Action is located in the ROS class of Semi Primitive Motorized (SPM). The SPM physical and

social recreation setting is typically characterized by a natural appearing environment with few administrative controls and low interaction between users (but evidence of other users may be present). SPM recreational experience is characterized by a high probability of isolation from the sights and sounds of humans within a setting that offers challenge and risk.

The 156-acre area where the lease modification is proposed is an area with overall low recreational use. The development and production of oil and gas resources and natural soda mining has resulted in a modified landscape with a somewhat high density of associated roads. This has resulted in relatively low use of this area by recreationalists. Current recreation activities in the project area include a low amount of elk and deer hunting during the fall with some potentially very minimal bear and lion hunting through the fall and winter. There is a low amount of OHV use in this area, typically on existing routes and primarily to access public lands. The proposed actions are located in Colorado Parks and Wildlife's Game Management Unit (GMU) 22. There is currently 1 Special Recreation Permit holder for commercial big game outfitting and guiding in this area and 13 SRP holders, which are permitted throughout the WRFO, for commercial mountain lion outfitting and guiding.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The act of modifying the existing Natural Soda lease to include an additional approximately 156 acres would not cause any impacts to visual resources. However, the likely subsequent development of this lease modification could have some indirect impacts to recreational opportunities and the recreational setting. A site specific NEPA analysis would completed for future proposed projects involving the development of this portion of the lease. It is anticipated that development within the modification area could involve the surface disturbance of approximately 35 to 45 acres if geologic conditions remain constant and current solution mining technologies are utilized for development. Surface disturbance would include; mining well pairs, exploration/monitoring wells, access roads, and associated well field pipelines. These types of impacts could affect the quality of desired hunting experiences especially during the construction periods. Other potential impacts to wildlife are discussed in the wildlife sections of this document. If access roads leading to the lease modification are improved or maintained at a higher level as an indirect result of the likely subsequent development of this lease modification, access to public lands could be improved as an indirect effect of this proposal. The modification of the landscape as a result of the subsequent development of this area would be incremental but could affect the recreational setting over time in this overall relatively small area.

Cumulative Effects: Combined with other existing, ongoing, and foreseeable oil and gas development and mining development activities in the area, the proposed action may begin to contribute to an increasingly impacted landscape with reduced recreational opportunities and undesired recreational experiences, and impacts recreational settings.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Because this lease would not be modified, there would be no new impacts to recreational opportunities and settings in this area as a result of this alternative.

Cumulative Effects: None identified as a result of this project.

Mitigation: None.

ACCESS AND TRANSPORTATION

Affected Environment:

The Proposed Action is located approximately 45 miles west of Meeker, CO. Primary access to the area includes traveling approximately 20 miles west of Meeker on State Highway 64, then traveling approximately 15 miles south on RBC Road 5 to RBC Road 24, then a few miles west on RBC Road 24 to RBC Road 31, then a few miles northwest on RBC Road 31 to the area proposed for lease modification. In the 1997 White River RMP/ROD, off-highway vehicles (OHV) are limited to existing routes from October 1 through April 30 each year in this area. Use of the routes near the Proposed Action consists of energy and mining development employees, local ranch operators, and recreational visitors.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The act of modifying the existing Natural Soda lease to include an additional approximately 156 acres would not cause any impacts to public access or the transportation system. However, the likely subsequent development of this lease modification could have some indirect impacts to the transportation system. A site specific NEPA analysis would completed for future proposed projects involving the development of this portion of the lease. It is anticipated that development within the modification area could involve the surface disturbance of approximately 35 to 45 acres if geologic conditions remain constant and current solution mining technologies are utilized for development. Some of this surface disturbance is anticipated to be access roads. Depending on the site specific nature of each proposed access road some likely effects, as an indirect result of this lease modification, could include incremental increases to the number of routes in this area, increased use of some routes, and increasing the maintenance level of some routes. Increasing the maintenance level of routes in this area as an indirect result of the lease modification could result in improved public access to this area of public lands for motorized users. The increase in traffic on some routes and the addition of new routes could impact non-motorized users of public lands in this area.

Cumulative Effects: Combined with other existing and foreseeable oil and gas and mining authorized routes in the area, BLM roads and county roads, the proposed action may indirectly begin to contribute to an increasingly dense transportation system in this area, should additional routes be proposed as a result of developing mineral interests in this lease modification area.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Because the lease would not be modified, there would be no changes to the existing transportation system, the use of routes, or access to public lands.

Cumulative Effects: None have been identified as a result of this project.

Mitigation: None.

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TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED:
Requests for tribal consultation for the overlapping oil shale lease tract COC74299 were mailed to tribes with a prior noted interest in this area on October 14, 2011. The Ute Mountain Ute, the Southern Ute Indian Tribe, the Ute Indian Tribe of the Uintah and Ouray Reservation, and the Eastern Shoshone Tribe were mailed letters on October 14, 2011. After the 30 days follow up phone calls and emails were conducted. The Eastern Shoshone Tribe was consulted with and they had no concerns. No other replies were received. The FWS Western Colorado Ecological Services Office was contacted February 12, 2014 to initiated Endangered Species Act section 7 consultation on the lease modification was with the. Project information provide to the FWS resulted in the determination of "no effect" for all listed and proposed species and requires no formal consultation.

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility	Date Signed
Bob Lange	Hydrologist	Air Quality, Surface and Ground Water Quality; Floodplains, Hydrology, and Water Rights; Soils	1/28/2014
Heather Woodruff	Range Management Specialist/ Acting Ecologist	Areas of Critical Environmental Concern; Special Status Plant Species; Forest Management	1/27/2014
Michael Selle	Archaeologist	Cultural Resources; Native American Religious Concerns; Paleontological Resources	2/3/2014
Mary Taylor	Rangeland Management Specialist	Invasive, Non-Native Species; Vegetation; Rangeland Management	1/29/2014
Ed Hollowed	Wildlife Biologist	Migratory Birds; Special Status Animal Species; Terrestrial and Aquatic Wildlife; Wetlands and Riparian Zones	2/11/2014
Aaron Grimes	Outdoor Recreation Planner	Wilderness; Visual Resources; Access and Transportation; Recreation,	1/21/2014
Kyle Frary	Fuels Specialist	Fire Management	1/16/2014
Paul Daggett	Mining Engineer	Geology and Minerals; Project Lead – Document Preparer; Hazardous or Solid Wastes,	5/22/2014

Name	Title	Area of Responsibility	Date Signed
		Social and Economic Conditions	
Stacey Burke	Realty Specialist	Realty	1/30/2014
Melissa J. Kindall	Range Technician	Wild Horse Management	1/17/2014
Heather Sauls	Planning & Environmental Coordinator	NEPA Compliance	6/12/2014

ATTACHMENTS:
Figure 1: Aerial Map
Figure 2 Topographic Map
Figure 3: Stratigraphic Chart

Figure 1: Aerial Map

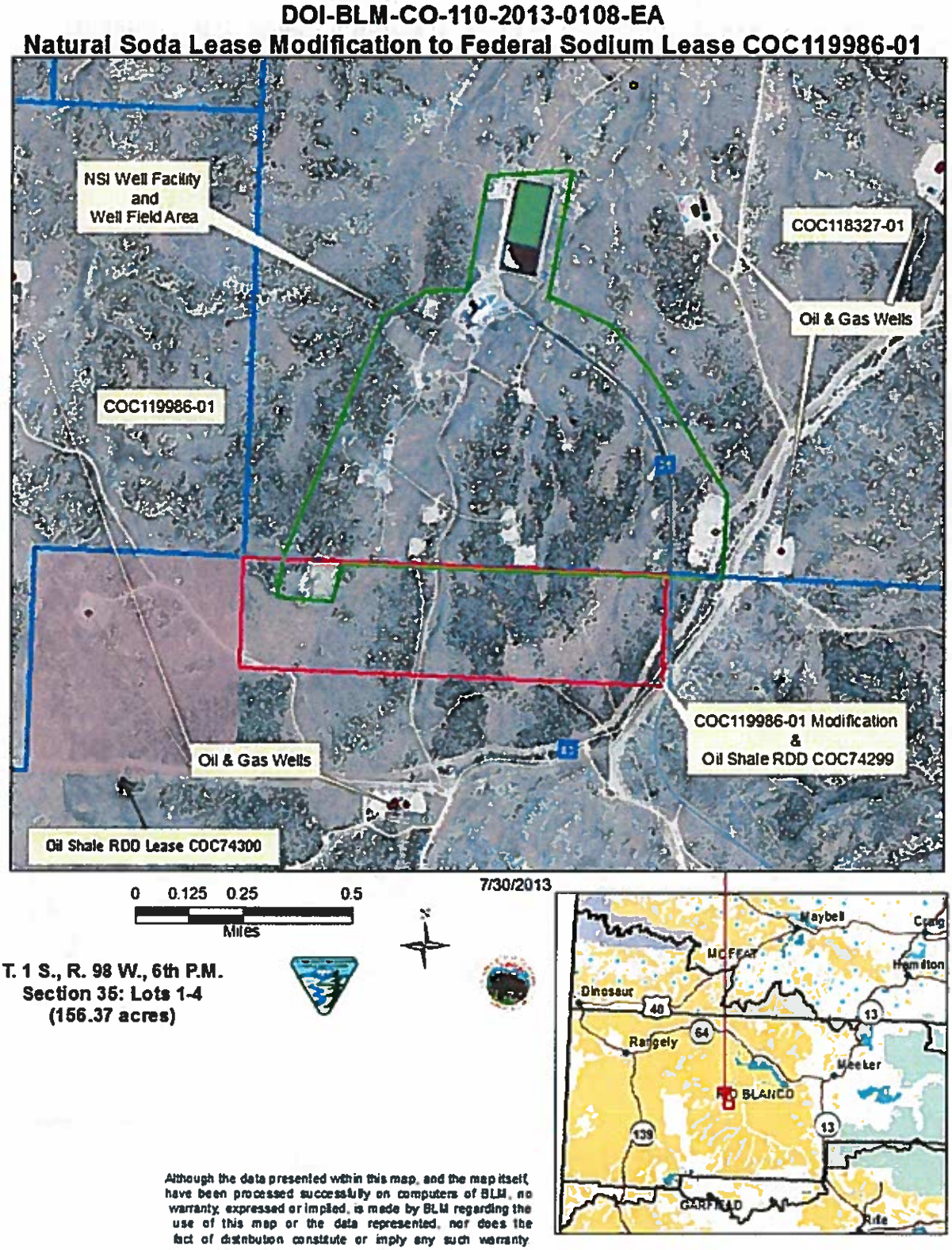


Figure 2:Topographic Map

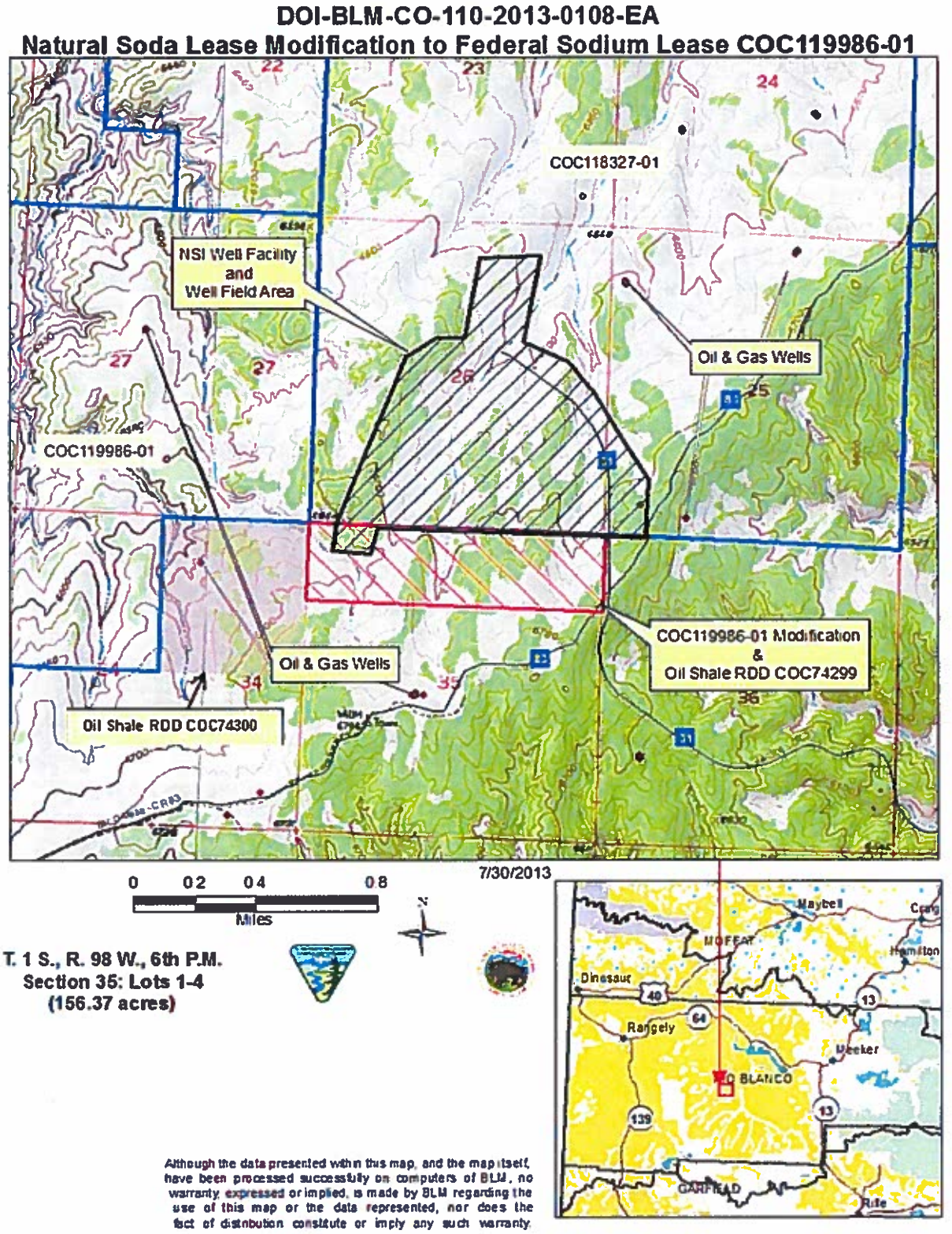
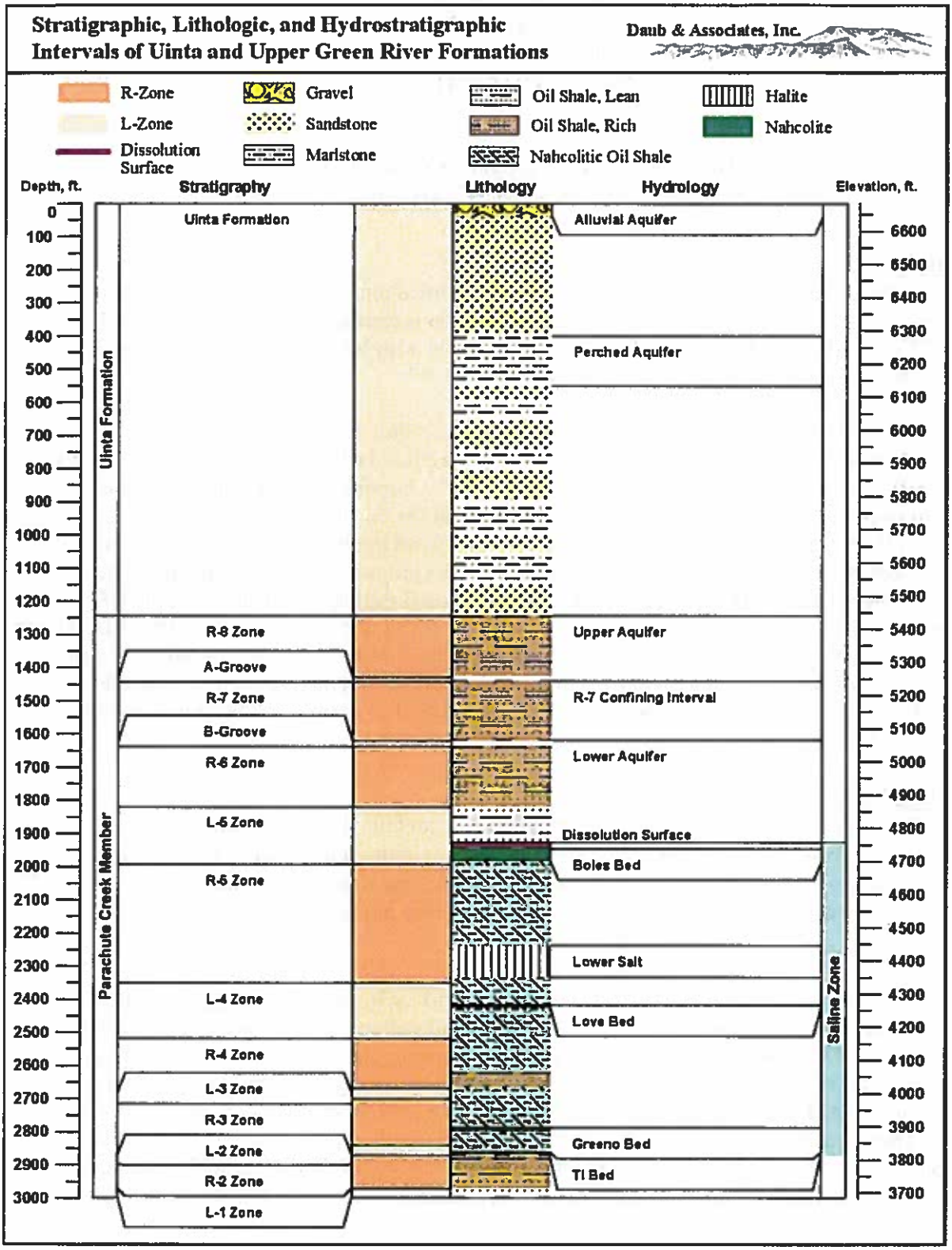


Figure 3: Stratigraphic Chart



re 3–1. General Stratigraphic, Lithologic and Hydrostratigraphic column of the Uinta and Upper Green River Formations. NSHI Nominated Lease Area.

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
220 E Market St
Meeker, CO 81641

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
DOI-BLM-CO-110-2013-0108-EA

BACKGROUND

Natural Soda Inc. (NSI) submitted an application for a modification of 157.36 additional acres to their existing sodium lease COC119986-01. The modification is contiguous with COC119986-01, borders NSI's sodium lease COC118327-01, and is congruent with Natural Soda Holdings Inc.'s (NSHI) oil shale RD&D lease COC74299 (Figures 1 and 2).

NSI submitted the lease modification because the area is adjacent to their permitted sodium operation, a logical extension of the existing operations, and could facilitate NSHI's oil shale RD&D project. NSHI's oil shale RD&D is a two stage process in which sodium bicarbonate (nahcolite) is solution mined prior to the heating and conversion process of the oil shale. NSHI's targeted nahcolitic oil shale horizons are below NSI's current commercial mining horizon. NSI's recovery of sodium bicarbonate in their current mining horizon within the proposed lease modification should have limited impacts on NSHI's oil shale RD&D. The Proposed Action would allow for the NSI to recover, process, and sell the sodium bicarbonate recovered during the first stage of NSHI's RD&D two stage process. Regardless of the success of NSHI's oil shale project the lease modification is a logical extension of NSI's solution mining operation, could prevent a potential sodium mineral bypass, and would allow for the maximum economic recovery of sodium bicarbonate within NSI's current mining horizon.

FINDING OF NO SIGNFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Proposed Action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

Context

This project is a site-specific action directly involving the surface impact of up to approximately 45 acres of BLM land and the subsurface recovery of the federal sodium minerals in a 156.37 acre lease modification area. Direct surface impact would be limited to temporary drill pads with facilities and access required for mine infrastructure associated with solution mining development. The land disturbance associated with this project would not change the existing character of the local landscape. There would be socioeconomic benefits related to solution mining sodium bicarbonate production at current and projected increased levels mined. Maximum short-term surface disturbance including temporary light-use access roads would be approximately 29 percent of the surface area of the lease area.

The primary human influences on the project area are oil and gas development, current oil shale RD&D, nahcolite mining, and livestock grazing. Existing environmental conditions in the project

area reflect changes based on past projects and activities. The project area is rural and relatively undeveloped but is experiencing growth related to energy development.

Intensity

The following discussion is organized around the 10 Significance Criteria described at 40 CFR 1508.27. The following have been considered in evaluating intensity for this Proposed Action:

1. Impacts that may be both beneficial and adverse.

Beneficial and adverse impacts of the Proposed Action were described in the EA. Mitigating measures and design features to reduce potential short-term impacts to air quality soils were incorporated. None of the environmental effects discussed in the EA are considered significant.

2. The degree to which the Proposed Action affects public health or safety.

The design features, environmental commitments, permit requirements, and industry standards and regulations for the construction, operation, and maintenance of facilities associated with solution mining of the sodium bicarbonate would minimize any public safety effects during the associated construction and operations of the Proposed Action. Post leasing operations would have to comply with the BLM's approved mine plan, Colorado Division of Reclamation Mining and Safety's mining permit and Environment Protection Agency Underground Injection Control Permit requirements.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

There are no known park lands, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas in the project area. As a result of cultural surveys the lease modification contains one site determined as Officially Needs Data by the Colorado Office of Archaeology and Historic Preservation (OAHP) due to its potential for buried cultural deposits. The Proposed Action with mitigation provides protection of the site located on the modification by a requirement applying a No Surface Occupancy (NSO) on an area that includes a 100 meter buffer of the site. In addition, the mitigation contains requirements and contingencies in the event that previously unknown cultural resources are identified.

4. Degree to which the possible effects on the quality of the human environment are likely to be highly controversial.

The decision for leasing additional sodium reserves and its effects are not unique. Sodium leasing decisions have been made in this area for over 40 years and there are currently over 16,000 acres associated with seven authorized federal sodium leases. There is no scientific controversy or the nature of the impacts. Reclamation and re-vegetation have been successful in the past and can continue to be successful. The potential intensity of effects on the quality of the human environment is minimal.

5. Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk.

The Proposed Action is not unique or unusual in this area. Development of the modification area would utilize conventional drilling and solution mining techniques, currently used in commercial operations. Commercial sodium solution mining has been in continual operations in the

immediate area since 1991. There are no predicted potential effects to the human environment that are considered to be highly uncertain or to involve unique or unknown risks.

6. Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
The Proposed Action neither establishes a precedent for future BLM actions with significant effects nor represents a decision in principle about a future consideration. The Proposed Action was considered in the context of past, present, and reasonable foreseeable actions. It is not unusual and significant cumulative effects are not predicted; nor does it entail any known issues or elements that would create a precedent for future mining or leasing. The White River ROD/RMP analyzes and allows for the development of the sodium resources within the Proposed Action area.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.
The Proposed Action was considered in the context of past, present, and reasonable foreseeable actions. No cumulative impacts related to other actions that would have a significant adverse impact were identified or are anticipated.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
The lease modification contains one site determined as Officially Needs Data by the Colorado Office of Archaeology and Historic Preservation (OAHP) due to its of its potential for buried cultural deposits. Mitigation provides protection of the site located on a requirement applying a No Surface Occupancy (NSO) on an area that includes a 100 meter buffer of the site. In addition, the Proposed Action with Mitigation contains requirements and contingencies in the event that previously unknown cultural resources are identified.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973.
No special status plant species were found when surveyed in 2011 and again in 2012. The nearest threatened plant population is two miles to the southeast of the modification area.

The lease modification would extend mining operations but would involve no further water use (depletion) from the Upper Colorado River system as habitat for the four endangered Colorado River fishes (including bonytail, humpback chub, razorback sucker). Water depletions attributable to this mining operation (219 acre-feet average annual) were addressed in earlier Section 7 consultation (SE/SLC: 6-5-86-F-019, August 28, 1986); the water use values analyzed in the consultation remain valid. Informal consultation for the project conducted with the U. S. Fish and Wildlife Service resulted in mutual determination of "no effect" for all listed species.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Neither the Proposed Action nor impacts associated with it violate any laws or requirements imposed for the protection of the environment.

Based on the above analysis of the context and intensity of potential impacts resulting from the Proposed Action, the BLM has determined that the proposed lease modification would have no significant impact on health or the human environment.

SIGNATURE OF AUTHORIZED OFFICIAL: Kent E. Walter

Field Manager

DATE SIGNED: 06/17/14

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
220 E Market St
Meeker, CO 81641

DECISION RECORD

PROJECT NAME: Natural Soda Lease Modification to Federal Sodium Lease COC119986-01

ENVIRONMENTAL ASSESSMENT NUMBER: DOI-BLM-CO-110-2013-0108-EA

DECISION

It is my decision to recommend the authorized modification of the addition of 156.37 acres to Federal Sodium Lease COC119986-01, as described in the Proposed Action of Environmental Assessment (EA), DOI-BLM-CO-110-2013-0108-EA with the mitigation below. Allowing for the development of the sodium minerals within the lease modification area in accordance with the lessee's lease rights.

Mitigation Measures

Design Features

1. All operations would conform to Natural Soda's approved Mine and Reclamation Plans.

Air Quality

2. Natural Soda will limit unnecessary emissions from point or nonpoint pollution sources and prevent air quality deterioration from necessary pollution sources in accordance with all applicable state, federal and local air quality law and regulation.
3. If the Natural Soda processing plant requires a stationary emission source permit, it is incumbent upon the applicant to apply and obtain a permit for the facility and provide BLM with a copy of this permit for its project files.
4. Natural Soda will treat all access roads with water and/or a chemical dust suppressant during construction and drilling activities so that there is not a visible dust trail behind vehicles. Any technique other than the use of freshwater as a dust suppressant on BLM lands will require prior written approval from BLM.

Soils

5. All construction activity and use of unsurfaced roads shall cease when soils or road surfaces become saturated to a depth of three inches unless there are safety concerns or activities are otherwise approved by the Authorized Officer.
6. All maintenance and construction of access roads should comply with the most recent version of the BLM's "The Gold Book".

Surface and Groundwater

7. To protect surface waters below the project area, keep road inlet and outlet ditches, sediment retention basins, and culverts free of obstructions, particularly before and during spring run-

off and summer convective storms. Provide adequate drainage spacing to avoid accumulation of water in ditches or on road surfaces.

8. Install culverts and low-water crossings with adequate armoring of inlet and outlet. Patrol areas susceptible to road or watershed damage during periods of high runoff.
9. Locate drainage dips and drainage ditches in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or dips.
10. To reduce erosion adjacent to roads and protect water quality in downstream public lands by maintaining the drainage features of the access roads, access roads will be surfaced with six inches of road base and/or gravel. Maintenance will include restoring the travel surface shape, road surfacing to maintaining an effective all-weather surface when required.
11. When drilling to set the conductor and surface casing, drilling fluid will be composed only of fresh water, bentonite, and/or a benign lost circulation material that does not pose a risk of harm to human health or the environment (e.g., cedar bark, shredded cane stalks, mineral fiber and hair, mica flakes, ground and sized limestone or marble, wood, nut hulls, corncobs, or cotton hulls).

Migratory Birds and Wildlife

12. Where practical, schedule pad and pipeline construction and drilling and completion operations to avoid the core migratory bird nesting season (May 15 to July 15).
13. Surface disturbing activities involving pad, pipeline, or access preparation or construction, the drilling and completion of wells, and routine activity-intensive maintenance and production activities would not be allowed on this lease between December 1 and April 30 to reduce cumulative impacts on wintering big game. This timing restriction would be subject to most-current exception and modification provisions developed in the White River RMP, as amended.
14. Lease developments would be subject to siting considerations that are intended to reduce long term and residual impacts on the utility and continued availability of suitable shrubland and woodland wildlife habitat in the lease tract. It is recommended that the operator consider these objectives to the extent practicable when planning lease development operations. These objectives would be used, where appropriate, by WRFO staff during project-specific on-sites and NEPA analysis to develop siting adjustment recommendations to meet those objectives. Siting considerations would apply equally to shrubland or woodland habitats and may include, but are not limited to, locating pads, access and pipeline corridors in the following manners:
    - on stand edges (i.e., avoiding the bisect of, or a centralized disturbance source in larger habitat patches);
    - more closely to existing long-term sources of disturbance (e.g., county roads);
    - in smaller or disconnected patches rather than larger and more cohesive stands;
    - among more heavily pinyon-juniper encroached shrubland;
    - in less mature/more open canopied woodland types;
    - in stands with more poorly developed understories; and
    - in stands more strongly represented by invasive annuals or introduced grazing-tolerant grasses.

Cultural and Paleontological

15. The holder is responsible for informing all persons who are associated with the project that they will be subject to prosecution for knowingly disturbing archaeological sites or for collecting artifacts.
16. If any archaeological materials are discovered as a result of operations under this authorization, activity in the vicinity of the discovery will cease, and the BLM WRFO Archaeologist will be notified immediately. Work may not resume at that location until approved by the AO. The holder will make every effort to protect the site from further impacts including looting, erosion, or other human or natural damage until BLM determines a treatment approach, and the treatment is completed. Unless previously determined in treatment plans or agreements, BLM will evaluate the cultural resources and, in consultation with the State Historic Preservation Office (SHPO), select the appropriate mitigation option within 48 hours of the discovery. The holder, under guidance of the BLM, will implement the mitigation in a timely manner. The process will be fully documented in reports, site forms, maps, drawings, and photographs. The BLM will forward documentation to the SHPO for review and concurrence.
17. Pursuant to 43 CFR 10.4(g), the holder must notify the AO, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), the holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
18. No new surface disturbance is permitted within T 1S, R 98W, Sec 35 NENE of Lot 4, and T 1S, R 98W, Sec 35 N1/2NW of Lot 3.
19. The holder is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate or other scientifically important fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
20. If any paleontological resources are discovered as a result of operations under this authorization, the holder or any of his agents must stop work immediately at that site, immediately contact the BLM Paleontology Coordinator, and make every effort to protect the site from further impacts, including looting, erosion, or other human or natural damage. Work may not resume at that location until approved by the AO. The BLM or designated paleontologist will evaluate the discovery and take action to protect or remove the resource within 10 working days. Within 10 days, the operator will be allowed to continue construction through the site, or will be given the choice of either (a) following the Paleontology Coordinator's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (b) following the Paleontology Coordinator's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.
21. Any excavations into the underlying native sedimentary stone must be monitored by a permitted paleontologist. The monitoring paleontologist must be present before the start of excavations that may impact bedrock.

<u>Hazardous or solid Waste</u>

22. Comply with all Federal, State and/or local laws, rules and regulations addressing the emission of and/or the handling, use, and release of any substance that poses a risk of harm to human health or the environment. All spills or leakages of oil, gas, produced water, toxic

liquids or waste materials, blowouts, fires, shall be reported by the operator in accordance with the regulations and as prescribed in applicable orders or notices

23. Where required by law or regulation to develop a plan for the prevention of releases or the recovery of a release of any substance that poses a risk of harm to human health or the environment, provide a current copy of said plan to the BLM WRFO.
24. All substances that pose a risk of harm to human health or the environment shall be stored in appropriate containers. Fluids that pose a risk of harm to human health or the environment, including but not limited to produced water, shall be stored in appropriate containers and in secondary containment systems at 110% of the largest vessel's capacity. Secondary fluid containment systems, including but not limited to tank batteries shall be lined with a minimum 24 mil impermeable liner.
25. Construction sites and all facilities shall be maintained in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
26. As a reasonable and prudent lessee, acting in good faith, all lessees and right-of-way holders will report all emissions or releases that may pose a risk of harm to human health or the environment, regardless of a substance's status as exempt or nonexempt and regardless of fault, to the BLM WRFO (970) 878-3800.
27. As a reasonable and prudent lessee and right-of-way holder, acting in good faith, all lessees and right-of-way holders will provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any substance that may pose a risk of harm to human health or the environment, regardless of that substance's status as exempt or non-exempt. Where the lessee/operator or right-of-way holder fails, refuses or neglects to provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any quantity of a substance that poses a risk of harm to human health or the environment, the BLM WRFO may take measures to clean-up and test air, water (surface and/or ground) and soils at the lessee/operator's expense. Such action will not relieve the lessee/operator of any liability or responsibility.

Forest Management

28. In accordance with the 1997 White River RMP/ROD, all trees removed in the process of construction must be purchased from the BLM. Trees should first be used in reclamation efforts and then any excess material made available for firewood or other uses.
    b) Woody materials required for reclamation must be removed in whole with limbs intact and stockpiled along the margins of the authorized use area separate from the topsoil piles. Once the disturbance has been recontoured and reseeded, the operator will scatter stockpiled woody material across the reclaimed area where the material originated. Redistribution of woody debris will not exceed 20% ground cover. Limbed material must be scattered across reclaimed areas in a manner that avoids the development of a mulch layer that suppresses growth or reproduction of desirable vegetation. Woody material will be distributed in such a way to avoid large concentrations of heavy fuels and to effectively deter vehicle use.
    c) Trees that must be removed for construction and are not required for reclamation will be cut down to a stump height of 6 inches or less prior to other heavy equipment operation.

These trees will be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.

Rangeland Management

29. Prior to any construction, a representative will coordinate with the appropriate WRFO Rangeland Management Specialist (970) 878-3800 to conduct a field inspection of the rangeland improvement project (water line) and address how to relocate the waterline and ensure that it is fully functional.
30. The holder will repair any future damage caused to this water line caused by development or operational activities.
31. Any damage caused to the pasture division fence caused by development or operational activities must be repaired to BLM specifications in a timely manner (to prevent livestock movement between these two pastures).
32. If it becomes apparent that livestock grazing use is negatively impacting establishment of seeded areas, fence those areas for a minimum of two to three growing seasons to prevent them from being grazed before they are adequately established. Installation, maintenance and removal of any fencing are the responsibility of Natural Soda. Any fencing installed must be built to BLM specifications.

Realty Authorization

33. Coordinate with existing ROW holders (Qwest, Rio Blanco County, Enterprise Gas Processing, Williams Northwest Pipeline, WPX Energy Rocky Mountain, Bargath, and White River Electric Association) prior to any construction activity.

COMPLIANCE WITH LAWS & CONFORMANCE WITH THE LAND USE PLAN

This decision is in compliance with the Endangered Species Act and the National Historic Preservation Act. It is also in conformance with the 1997 White River Record of Decision/Approved Resource Management Plan.

ENVIRONMENTAL ANALYSIS AND FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the referenced Environmental Assessment (EA), and considering the significance criteria in 40 CFR 1508.27, a Finding of No Significant Impact (FONSI) was prepared. The Proposed Action with mitigation will not have a significant effect on the human environment. Therefore, preparation of an Environmental Impact Statement is not necessary. This finding is based on the context and intensity of the alternatives as detailed in the FONSI.

PUBLIC INVOLVEMENT

Scoping was the primary mechanism used by the BLM to initially identify issues. Internal scoping was initiated when the project was presented to the White River Field Office (WRFO) interdisciplinary team on 8/6/2013. External scoping was conducted by posting information about this project on the WRFO's on-line NEPA register web site (http://www.blm.gov/co/st/en/fo/wrfo/index.html) on 8/26/2013. On 1/9/2014 and 1/13/2014 the WRFO received a request from Information Network for Responsible Mining (INFORM) for

additional information. Additional information was submitted by the WRFO to INFORM on 1/10/2014 and 1/13/2014. As of 5/31/2014 no issues or comments have been received.

RATIONALE

Analysis of the Proposed Action has concluded that there are no significant negative impacts and that it meets Colorado Standards for Public Land Health. The lease modification is contiguous with federal sodium lease COC119986-01, a logical extension of an existing permitted sodium solution mining operation, would facilitate the development of congruent oil shale RD&D lease COC74299, would prevent the potential bypass of approximately 670,000 tons of sodium bicarbonate, and allow for the maximum economic recovery of sodium bicarbonate.

ADMINISTRATIVE REMEDIES

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 Code of Federal Regulation (CFR), Part 4.400 and Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 days from date of publication this decision. The appellant has the burden of showing that the Decision appealed from is in error. If you wish to file a petition for a stay of the effectiveness of this Decision during the time that your appeal is being reviewed by the Board, the petition for stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. A copy of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals (IBLA) and to the appropriate Office of the Solicitor (see 43 CFR4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for obtaining a stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;
2. The likelihood of the appellant's success of the merits;
3. The likelihood of immediate and irreparable harm if the stay is not granted, and;
4. Whether the public interest favors granting the stay.

SIGNATURE OF AUTHORIZED OFFICIAL: Kent E. Walter

Field Manager

DATE SIGNED: 06/17/14